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LAND USE AND RESOURCE DEVELOPMENT

Steve H. Hanke — The Privatization Debate: An Insider's View

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THE PRIVATIZATION DEBATE: AN INSIDER'S VIEW

Steve H. Hanke

Not content with justifying the idea of private property, I should like to make it appealing even to the most rabid partisans of public ownership.

Frederic Bastiat (1850)

The federal government's land holdings, which are six times larger than France, are a serious problem, symptomatic of a grave disease.[1] The cure is privatization.[2]

Even though it is most tempting to lash out at the rabid partisans of public ownership, we chose not to take this course. Instead, our observations are addressed primarily to those who favor privatization, but have lost their way.

Why a Public Lands Debate?

Under a system of public ownership, politicians, bureaucrats and special interest groups determine, through political-bureaucratic processes, how resources will be used. Debate and tension charac-

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[1]For recent evidence, see S. H. Hanke, "Privatize Those Lands," *Reason*, March 1982; idem, "Grazing for Dollars," *Reason*, July 1982; idem, "Selling Federal Lands," *Inquiry*, September 1982; idem, "On Privatizing the Public Domain," in P. N. Truluck, ed., *Private Rights and Public Lands* (Washington D.C.: The Heritage Foundation, 1983); and idem, "Department of the Interior Land Policy," in R. Holwill, ed., *Mandate for Leadership* (Washington D.C.: Heritage Foundation, 1983).

[2]Since there have been numerous attempts to distort the meaning of privatization, some definitions are in order: privatize: to invest control and ownership to a private person or private legal entity; privatization: the action or process of privatizing.

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terize this ownership system. And, from time to time, the bureaucratic-political processes that accompany public resource use decisions break down, particularly when changes in demands and/or resource supplies occur. Breakdowns, of course, lead to open conflict.

At present, open conflict between commercial and noncommercial users of the public lands exists. It is the result of factors which have dramatically reduced the political access of the commercial users and also the quantity of public lands that are available for commercial uses.

To bring the picture into focus, we use events associated with the allocation and use of the 155 million acres of federally owned grazing lands. As an indicator of reduced access to the political-bureaucratic processes, we only need to mention that ranchers comprised 100 percent of the National Public Lands Advisory Council (formerly, National Advisory Board Council) in 1940; their representation was reduced to only 12 percent by 1980.[3] Accompanying reduced political access has been a sharp decline in the public range capacity allocated to commercial livestock: From 1959 to 1980, the grazing forage or animal unit months (AUMs) authorized for commercial livestock declined by 40 percent.[4] Further reductions in livestock AUMs will no doubt result from environmental impact statements on the grazing program and wilderness reviews, the former being mandated by a court case and the latter by the Federal Land Policy and Management Act of 1976.[5]

If reduced commercial capacity allocations were not enough, noncommercial users of public lands have come very close to convincing the Office of Management and Budget personnel that the grazing fee formula should be modified.[6] This death wish would have the effect of increasing the price ranchers are required to pay for the AUMs allocated to livestock use. Hence, it would reduce the number of AUMs that ranchers actually purchase.

Faced with these dramatic changes and continued threats, the political-bureaucratic process for allocating public grazing lands was bound to break down. The first formal manifestation of the frustration came from Nevada, a state in which the federal government owns 86

[3]R. M. Cawley, "The Sagebrush Rebellion" (Ph.D dissertation, Colorado State University, 1981).

[4]U. S. Department of Interior, Bureau of Land Management, *Public Land Statistics* (Washington D.C.: Government Printing Office, 1980).

[5]*Natural Resources Defense Council, Inc., et al.* v. *Rogers C. B. Morton et al.* (D.C.) 388 F. Supp. 829 (1974).

[6]This is based on personal observations made during the final stages in the preparation of the Budget of the United States, FY 1983.

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percent of the land. In 1979, the Nevada State Legislature passed Assembly Bill 413 by a vote of 55 to 4, with one abstention. This bill declared that the State of Nevada was the legal owner of federal public domain lands within the state's boundaries.

Nevada's claim gave birth to the so-called Sagebrush Rebellion, the objective of which was to transfer lands to state ownership. The rebellion quickly spread to other Western states, and was framed as a states-rights issue in which the rebels were attempting to transfer land ownership and control from Washington to their respective state capitals. By accomplishing this, the rebels thought they could once again dictate land-use policy.

Breaking New Ground

During their review of public land policies, President Reagan and some of his advisers realized that the solution offered by the Sagebrush Rebellion was fundamentally flawed: It would merely substitute one *form* of public ownership and political-bureaucratic process for another. As such, it offered no *substantive* solution for the problems inherent in government ownership and control of land and other resources.[7]

The President broke new ground on the public lands issue in his Budget Message for Fiscal Year 1983, when he endorsed the goal of privatizing the public lands:

> [W]e will move systematically to reduce the vast holdings of surplus land and real property, [since] some of this property is not in use and would be of greater value to society if transferred to the private sector. In the next 3 years we would save $9 billion by shedding these unnecessary properties while fully protecting and preserving our national parks, forests, wilderness and scenic areas.

In addition to his budget statement, the President issued Executive Order 12348 on February 25, 1982, which established a Property Review Board as part of the Executive Office of the President. The Board was directed to:

- develop and review federal real property acquisition, utilization, and disposal policies;
- advise the administrator of the General Services Administration (GSA) in setting standards and procedures to ensure that real property no longer essential be promptly identified and released for appropriate disposition;
- review prior disposals of surplus property made at discounts for

[7]For the theoretical underpinnings of this analysis, see Ludwig von Mises, *Socialism* (Indianapolis: Liberty Classics, 1981).

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the "public good" to ensure that the property is being used and maintained for the purpose intended;
- receive the reports made by or to the GSA on federal real property, placing particular emphasis on resolving conflicting claims on and alternate uses for property described in these reports;
- establish a target amount of real property to be identified as excess for each executive agency.

The Executive Order also required the head of each federal agency to survey public property holdings and identify those that were underutilized or unused. Real property identified by the various agencies and the GSA as surplus was ordered to be promptly made available for its most beneficial use.[8]

The President's privatization policies would generate considerable benefits for the nation. For example, the following benefits would result from privatizing federal grazing lands.

1. The productivity of Western grazing lands would increase, and the cost per unit of output would fall, since private land owners would not have to jointly manage lands with federal bureaucrats.

2. Consumers would be served more effectively and lands would be allocated to their most highly valued uses. After all, the only way that private land owners can profitably enjoy their property is to employ it for the satisfaction of other people's wants. The only way the land owners can take advantage of what they own is to serve consumers. This, of course, is the social function of private property.

3. Current federal revenues would be generated and earmarked to retire the national debt. Hence, the liabilities we bequeath to future generations would be reduced.

4. The annual federal costs (which incorrectly omit capital carrying charges) exceed the annual revenues generated from federal grazing lands. Therefore, privatization would eliminate negative cash flows for the federal government. This would obviously benefit all U. S. taxpayers, who must now pay taxes to support the federal government's retention of public grazing lands.

5. A state and local tax base would be created. Western dependence on in-lieu payments from Washington would be eliminated and federalism would be enhanced.

6. Land-use decisions would become less politicized, and commercial and noncommercial land users would have to spend less of

[8]It is important to note that the President's privatization policies were developed and will be administered within the Executive Office of the President. Also, these policies are not new. They are very similar to those advocated by Alexander Hamilton and adopted between 1787 and 1862, when about 155 million acres of public land were sold to generate revenue to retire the Revolutionary War debt.

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their time and money attempting to obtain land-use rights through the political-bureaucratic processes.

The Simple Analytics of Privatization: The Case of Grazing Lands

Until the passage of the Taylor Grazing Act in 1934, the public domain was operated as a large commons. Since the Act, a more orderly method of utilization has been in effect. For the right to use public grazing lands, ranchers must acquire grazing permits. To obtain these permits, ranchers must pay annual rents to the U. S. government. By custom, the grazing permits are attached to specific parcels of private land.

The linkage between public permits and private land has had a profound impact on the market for private land. The annual public grazing fees have been set below market-clearing levels. As a result, the grazing permit market has been cleared—supply has been equated with demand—not through the public grazing permit market itself, but through the market for the private lands that are linked to public permits. The difference between the public grazing fees that are charged and those that would clear the market for grazing permits has been capitalized into the value of the private lands that permits are attached to.

The linkage, through the capitalization process, between the market for public permits and that for private land, has important implications. With the exception of those who obtained the original permits, all ranchers have had to pay two prices for their public permits—a public price, in the form of an annual grazing fee, and a private price, in the form of a higher price for private ranch land.

When ranchers purchase a private ranch with public grazing permits attached to it, they are purchasing two items: the private ranch land and the right to purchase public permits at a price set below the market-clearing level. In short, the ranchers are purchasing a property interest in the public lands. This is, of course, recognized in the market place and is reflected in the premiums paid for private ranch land. It is also recognized by private and public bankers who specifically identify the premiums and use them as collateral when ranchers obtain bank loans. The property interests that private ranch owners have in public lands is also recognized by the Internal Revenue Service for inheritance tax purposes. Given the private and public recognition of these private property rights in public lands, the federal government should honor them.

To privatize public grazing lands and transfer surface rights to

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private ranchers, while honoring the legitimate private rights that ranchers already have in these public lands, we must first compute the value of the land that the ranchers have not already paid for; that is, we must estimate the present value of rental payments which would be required if ranchers were to retain their use rights on the public lands. This value can be estimated by capitalizing over a 50-year period (at between one and two-and-one-half percent real rate of interest) the annual grazing fees (an annual average paid over the past five years in 1982 dollars) that the rancher has paid.[9]

A concrete example illustrates how to compute this value (the first-refusal price). The ranch in question is operated as a single unit. However, its lands are distributed in the following ownership pattern: 4,816 acres are privately owned, 8,333 acres are owned by the state government; and 1,500 acres are owned by the federal government. Table 1 summarizes the steps required to apply the formula for determining the first-refusal price, or the value of the federal land that the rancher has not already paid for through premiums on his private land. The value in this case is $18.88 per acre.

Once the first-refusal price calculation is completed, we can determine the terms of sale for privatizing public grazing lands. There are two possible formats for privatization. The first format would require that each rancher be offered an option to purchase, on a first-refusal basis, the public grazing lands that he now rents from the government. The first-refusal price should be set so that the ranchers are only charged for that portion of the public lands' value that has not already been paid for through premiums on private land. In our example, the option would be offered at a first-refusal price of $18.88 per acre.

If a rancher should fail to exercise his option, then the lands in question should be sold to the highest bidder at a public auction. Since, in this case, the rancher's lease-hold rights in the public lands would be sold, the government should compensate the rancher for the decreased capital value of his private ranch land.[10] This compensation should be equal to the differences between the price received

[9]The recommended real rates of interest are based on the real rates that could have been obtained at Federal Land Banks (1950–1980, mean = 2.47 percent, and the five-year average is an estimate of annual future fee payments).

[10]Recall that the rancher paid for the government's under-priced grazing rights when he bought his ranch, expecting to capture the benefits from such rights into the distant future. When the government sells its grazing lands to an "outsider," the rancher will incur an unexpected capital loss in the form of a decrease in the value of his private ranch land. Since the government land-use policy initially forced the rancher to pay a premium for his property, he should be compensated for the subsequent capital loss imposed by the government's policy switch toward privatization.

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Table 1

First-Refusal Price Calculations for Grazing Land

Step 1: Adjust Lease Payments to 1982 Dollars

(1) Year	(2) Payments in Current $	(3) Inflation Adjustment Factor	(4) = (2) × (3) Payments in 1982 $
1977	$616	1.50	$ 924
1978	616	1.41	869
1979	771	1.31	1,010
1980	963	1.20	1,156
1981	942	1.09	1,027

Step 2: Calculate Average Annual Lease Payment in 1982 Dollars

Total Payments in 1982 $ = $4,986
Total Number of Years = 5
Average Annual Lease Payment in 1982 $ = $4,986/5 = $997

Step 3: Capitalize Average Annual Lease Payment to Determine First-Refusal Price

Average Annual Lease Payment in 1982 $ = $997
Capitalization Factor at 2.5% for 50 years = 28.4*
First-Refusal Price = $997 × 28.4 = $28,315

Step. 4: Calculate the First-Refusal Price Per Acre

Total First-Refusal Price = $28,315
Total Acres Under Lease = 1,500
First-Refusal Price Per Acre = $28,315/1,500 = $18.88

*Capitalization factors for 50 years and 1, 1.5 and 2.0 percent are 39.2, 35.0 and 31.4, respectively.

at the auction and the first-refusal price. Again, with reference to our example, if the rancher failed to exercise his option at the first-refusal price of $18.88 per acre and the land was sold for $28.88 per acre, then, to honor the rancher's property rights, the government would have to compensate the rancher at a rate of $10 per acre.

The second format for privatization would be a straight public auction. In this case, however, all participants in the auction would not be operating on an equal footing. Ranchers, who own lease-hold

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rights in the public lands, would have these rights honored by the government. If a rancher was the highest bidder at the auction, he would receive a credit equal to the difference between his bid and the first-refusal price. Hence, a rancher would only be required to pay the government the first-refusal price or that portion of the land's value that he has not already paid for. In our example, the rancher would receive enough credits to make his net price to the government equal to $18.88 per acre.

If a rancher with existing lease-hold rights in the public lands (grazing permits) was not the highest bidder, he would not receive title to the land in question. However, to honor his rights, the government should pay the rancher compensation for the value of his lost assets. This value would again be equal to the difference between the price received at the auction and the first-refusal price. In our example, if an "outsider" made the high bid of $28.88 per acre, the rancher would receive compensation at the rate of $10 per acre.

Asset Hoarding: A Cancer From Within

Instead of cataloguing the opponents to privatization and refuting their arguments, it is more instructive to note the economic essentials of the bias toward asset hoarding in the public sector.[11] The fact that government officials do not have to pay capital carrying charges or rents for the assets they control means that no costs have to be budgeted for holding public assets. Once assets are under government ownership and control, they are viewed by bureaucrats as being free—nothing must be given up for the assets' use and retention. Furthermore, if a decision is made to dispose of public assets, the revenues from their disposal are usually not earmarked for use by the department or agency that initiates the sale. Hence, there are no bureaucratic or budgeted benefits that flow from the liquidation of government property. But, there may be significant costs to bureaucrats from public asset liquidation. For example, if the Bureau of Land Management (BLM) and the U. S. Forest Service liquidated the lands they manage, they would significantly reduce their employment opportunities and growth potentials, since the Forest Service's and BLM's raison d'être is to manage federal land.

The bias toward asset hoarding in government represents a real problem that has not been altered by the President's privatization program. Indeed, there is strong evidence to suggest that government

[11]This bias only applies to physical assets. For working capital, the bias is toward dishoarding.

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bureaucrats have been effectively protecting their asset-hoarding bias and undermining the President's privatization efforts. Some of the President's own appointees have even expressed their reluctance to use the term "privatization." For example, at a recent meeting of the National Public Lands Advisory Council, the Assistant Secretary for Land and Water at the Department of the Interior stated that he "abhorred the word privatization and asked that the council members never use it."[12]

Another variation of the attack on the concept of privatization has been carefully spelled out by civil service bureaucrats. Commenting on a paper delivered by Professor Joseph Sax at a recent conference on privatization, the Director of the Office of Policy Analysis at the Department of the Interior stated:

> Professor Sax's paper is a valuable exposition of several important public issues regarding the sale of Federal lands into the private sector. It is important to note, as Professor Sax did in his presentation, that the issues he discusses have little bearing on the current Asset Management Program of the Federal Government. Instead, he is talking about what is commonly known as "privatization," a large scale divestiture program proposed by academics who are not a part of the current Administration. By contrast, the Asset Management Program is a small, careful, and responsible program involving land sales following extensive planning and public involvement.[13]

By distorting the meaning of the word "privatization" (see note 2) the President's critics have been able to assert that they are supporters of the Asset Management Program—a modest proposal for privatization—while at the same time opposing privatization.[14] If the President's program is to be a success, the bureaucratic bias toward asset hoarding and the double talk about privatization must be recognized and effectively dealt with. The cancer from within must be arrested.

Two treatments should be applied. The first involves White House attention to the program. All that is required is for the President to express to his staff, and more specifically to his political appointees

[12]Ben Avery, "Sale of Public Land Draws Opposition," *The Arizona Republic*, October 7, 1982

[13]Comments on a paper by Joseph Sax entitled "For Sale: A Sign of the Times on the Public Domain," delivered at the National Workshop on Rethinking the Federal Lands, sponsored by Resources for the Future, September 8-10, 1982, in Portland, Oregon.

[14]For a healthy reaction to this type of double talk, see Margit von Mises, *My Years with Ludwig von Mises* (New Rochelle, N.Y.: Arlington House, 1976), pp. 145–146.

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in the Departments of Interior and Agriculture, his personal interest in privatization.[15]

The second treatment that should be applied is *genuine* asset management. The objective of holding a portfolio of commercial lands, such as those subject to review under the President's directives, should be to earn a target rate of return. Therefore, if asset management is to be taken seriously and the bureaucratic bias toward asset hoarding is to be overcome, the President's Property Review Board should require that all lands that do not yield a real rate of return of 10 percent under public ownership should be classified as surplus and privatized.[16] This second treatment would add discipline and accountability to the President's Asset Management Program.

Concluding Observations

The President's modest program to privatize a limited amount of commercial land has received a great deal of negative press coverage. Journalists have been overwhelmed by the negative emotional responses from environmentalists and bureaucrats who oppose *any* attempt to sell off federal lands. In general, the media has failed to understand the economic logic behind privatization and the social benefits that would result. Therefore, the courting of journalists and politicians by environmentalists and bureaucrats has resulted in the deluded leading the blind.

These facts notwithstanding, there is cause for optimism about privatization, for the privatization debate has begun to stir the instinct for freedom from government coercion. The real issue in the privatization debate is coming to the forefront: the choice between capitalism and socialism, or between private property and individual freedom versus public ownership and serfdom. Given the growing public sentiment for privatization, it is somewhat puzzling that conservative politicians have failed to rally behind the privatization drive; but this is not the first time that conservatives have failed to support the principles of a free society.[17] This is changing, however, as more citizens ask conservative politicians to account for their stewardship and weak stand on the issue of our nationalized lands.

[15]I have observed that expressions of personal interest by the President have a sobering affect on political appointees. For example, the President's initial personal attention to privatization guaranteed that the program was swiftly developed exclusively within the Executive Office of the President. Great care was taken to avoid sabotage by bureaucrats and political appointees who were located outside the EOP.

[16]For a technical treatment of this target rate of return criterion and the details for implementation, see Hanke, "Department of the Interior Land Policy."

[17]For a well-researched volume on conservatives' support of socialist policies, see Gabriel Kolko, *The Triumph of Conservatism: A Reinterpretation of American History, 1900–1916* (Glencoe, Ill.: The Free Press, 1963).

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ON DIVESTITURE AND THE CREATION OF PROPERTY RIGHTS IN PUBLIC LANDS

Vernon L. Smith

Approximately 628 million acres, or over one-fourth of the land area of the United States, is owned by the federal government. A predominant share of this land is located in the West. Over one-half of the land areas of Alaska, Idaho, Nevada, Oregon, and Utah belong to the federal government. Alaska, the extreme case, is 89 percent federally owned.

The immense petroleum and gas wealth potential of state and federal lands in Alaska—a state that is relatively poor in private wealth—together with changes in the political climate in Alaska and generally in the Western states, has produced a variety of proposals designed to increase private access to these lands. The Sagebrush Rebellion led to the proposal that federal lands be transferred to the states, which would then lease them or otherwise permit private access to them on terms determined by the state political environment. In Alaska, where the state income tax has already been repealed, a serious effort is being applied to

> find a way to assure that the state divests itself and transfers to the people all income producing resources. There are a number of plans being discussed, such as establishing a pass-through corporation or irrevocable trust that would own all of the royalties or mineral rights on state lands and distribute shares of stock to each "Alaskan." Another would devise a subsidized leasing system which would allow even those Alaskans of modest means to participate. An idea which would give the rights directly to individual Alaskans would

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Part of this paper draws on my review of Marion Clawson's manuscript, "Public Lands Revisited," which I prepared at the request of Richard Stroup. I am indebted to Stroup and Clawson for the opportunity to read a very stimulating examination of public land issues. Research support from the Earhart Foundation is gratefully acknowledged.

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> involve a giant lottery, where every Alaskan would have a chance, based on the luck of the draw, to own a very valuable piece of property. This could include both surface and subsurface rights, or only subsurface rights.[1]

A complementary development is the growing documentation by natural resource economists of governmental mismanagement of the public lands. These critical studies of what is largely a problem of underpriced (or zero priced) resources and common property mismanagement include the federal park system, forest resources, grazing lands, wilderness and wildlife resources, federal dam-building programs, and the barrier islands in our coastal areas.[2] Many of these studies call for some form of privatization.

This paper sets forth some criteria for evaluating any proposed divestiture of rights to public land, examines some historical and current proposals for divestiture in terms of these criteria, and attempts to articulate in some detail a comprehensive program for auctioning all rights to public lands over the next few decades.

Criteria for Evaluating Alternative Divestiture Plans

Of the many criteria that might be used to evaluate alternative methods for the divestiture of rights to public land, I suggest four:

[1]Letter to the author from Rep. Richard L. Randolph, Alaskan Legislature, March 20, 1981.

[2]On the federal park system, see James P. Beckwith, Jr., "Parks, Property Rights, and the Possibilities of the Private Law, "*Cato Journal* 1 (1981): pp. 473–99; and for a critique (based on a GAO report) of the heavy-handed treatment of private property owners by the U.S. Park Service, see "The Silent Scandal," *Wall Street Journal*, May 25, 1982, p. 24. On forest resources, see Charles R. Batten, "Toward a Free Market in Forest Resources," *Cato Journal* 1 (1981): pp. 501–17; Marion Clawson, "The National Forests, *Science* 191 (February 20, 1976): pp. 762–67; and William F. Hyde and Kay Blemker, "Compounding Clearcuts: The Social Failures of Public Timber Management in the Rockies," in John Baden, ed., *Earth Day Reconsidered* (Washington, D.C.: The Heritage Foundation, 1980), chap. 5. On grazing lands, see John Baden and Richard Stroup, "Property Rights, Environmental Quality, and the Management of National Forests," in Garrett Hardin and John Baden, eds., *Managing the Commons* (San Francisco: W. H. Freeman and Co., 1977), pp. 238–40; Gary D. Libecap, "Competing for the Rental Value of Federal Land," *Cato Journal* 1 (1981): 391–404; and Libecap, *Locking Up the Range: Federal Land Controls and Grazing* (Cambridge, Mass.: Ballinger Publishing Co., 1981). On wilderness and wildlife, see William C. Dennis, "The Public and Private Interest in Wilderness Protection," *Cato Journal* 1 (1981): pp. 373–90; and Robert J. Smith, "Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife," in ibid., pp. 439–68. On dams, see Bernard Shanks and Kay Blemker, "Dams and Other Disasters: The Social Costs of Federal Water Development Policies," in *Earth Day Reconsidered*, pp. 55–62. On the barrier islands, see William J. Siffin, "Bureaucracy, Entrepreneurship, and Natural Resources: Witless Policy and the Barrier Islands," *Cato Journal* 1 (1981): 293–311.

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1. Allocation to the Highest Valued Use (Efficiency)

Each tract of land or combination of rights to the tract should be allocated to those uses that command the highest value. Thus, land whose value is greatest in timber production alone should not be used for grazing. Land whose value is greatest when water and surface rights are separated should be represented by a property rights system in which deeds to surface rights and water rights are separable and marketable. Similarly, remote wilderness areas for which logging or mining are too costly should be preserved from such uses. These criteria are achieved by a well-defined system of alienable, separable, private property rights, which permit all potential gains from exchange in markets to provide incentives for the allocation and reallocation of land use rights to those functions that are perceived to command the highest value.

2. Low Transaction Costs

Given a choice between two divestiture plans, both capable of satisfying the first criterion, the preferred alternative would be the one for which the transaction costs to the participants are lowest. Hence, following divestiture, if plan A requires more secondary market exchange than plan B, then plan B would be preferable.

3. Broad Participation

Since we are concerned with resources now held in the public domain, which in principle belong to all citizens, it is desirable to permit the broadest possible participation in any divestiture proceedings. If public lands belong to all citizens, than all citizens have a legitimate claim to share directly in the realized wealth created by divestiture. Note that this does not mean that every citizen need be given an ownership right to some tract of public land.

4. Recognizing Squatters' Rights

Variously misguided or now obsolete public policies may have created de facto partial rights in public lands. For example, grazing permits have been issued by the Bureau of Land Management (BLM) and the U.S. Forest Service, and many have been renewed or sold, sometimes along with adjoining private land. Consequently, the value of these permits has been capitalized into the price of home-base ranches.[3] Similarly, subsurface groundwater rights have been capitalized in the price of adjoining land under the common or statutory law "rule of capture" that governs riparian rights in many states.

[3]Baden and Stroup, pp. 238–39.

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Perhaps the simplest procedure for dealing with these cases, which has already been done in practice, is to recognize squatters' rights officially by a recorded, transferable deed. All remaining land rights—for example, rights not previously appropriated, de facto—would be part of the divestiture plan.

Of these four criteria, the first is by far the most essential, not so much because efficiency per se should be the paramount objective, but because efficiency is achieved by a process or atmosphere that (permissively, at least) encourages a search and comparison of alternatives. It is this exploratory process, motivated by reward, that encourages innovation and permits the best resource use to be discovered and implemented where knowledge is imperfect. Thus, price and allocation theory (efficiency) cannot be validly separated from information and search theory.

Privatizing Public Lands: Some Historical Programs and Current Proposals

To provide some perspective on these divestiture criteria it is useful to briefly examine some historical programs and some of the recent proposals to privatize rights to public land.

The Homestead and Similar Acts

It is worth emphasizing that the Homestead Act of 1862, our most important divestiture program for opening the American West, did not meet the above criteria. Under the Act, title to 160 acres of land could be acquired by adult citizens paying $1.25 per acre or by "proving" cultivation and five years residence on the land. Since land is not homogeneous, the fixed supply price encouraged misallocation by underpricing more valuable tracts and delaying the divestiture of less valuable tracts. Cultivation and residency requirements presupposed that the land was to be used for agriculture and that residency was a good screening rule for land allocation. Since land use and the efficacy of residency are matters for the market to determine, the Homestead Act violated criteria 1 and 2. Since homesteaded land was freely alienable, however, criterion 1 ultimately was satisfied through the added costs of secondary exchange. The presumption that all land available under the Homestead Act should be used for cultivation is evident in the attempt by Congress to prevent "misuse" of the Act by requiring homesteaders to "swear that the land was intended for actual settlement and cultivation and that entries were not being made for any other person."[4]

[4]Paul W. Gates, *History of Public Land Law Development* (Washington, D.C.: U.S. Government Printing Office, 1968), p. 395.

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Although legislation had provided for the privatization of land for agricultural purposes and for mining (via the Mining Act of 1866 and subsequent mining acts), Congress made no specific provision for timberlands until the Timber and Stone Act in 1878. Prior to this date, private timber holdings were acquired under laws allowing cash or scrip sales, or fraudulently under the homestead and preemption laws. Any risks associated with fraud were unnecessary, artificial additions to the transaction costs of privatizing public lands. Since enforcement was nil, however, the damage was probably slight.

Similarly, the Mining Act of 1866 and its successors did not satisfy the above criteria. As in the Homestead Act, rules required that a piece of land (i.e., lode) be "worked" before it could qualify as a mining claim and title could be obtained. Since these claims were alienable, criterion 1 was satisfied by secondary exchange.

Concerning criterion 4, it should be noted that recognizing full squatters' rights by deed has many implementational limitations. Where such rights have not been clearly established by administrative records, there will be an incentive to claim these prior rights and invest in proving or acquiring them, which is a deadweight loss. Historically, the problems of squatters on public land in the late 18th century eluded all attempts to control it by force[5] and eventually gave way to a series of preemption acts beginning in 1830. These acts recognized the preferential right of squatters to purchase land, including improvements, at $1.25 per acre.[6] It is possible that some variety of preferential purchase right would be appropriate as an alternative to criterion 4 for certain present-day private uses of the public lands.

Extension of the Federal Leasing Program

An alternative to complete divestiture of the public lands is simply to extend, and perhaps strengthen, the federal leasing program as it now applies to offshore oil exploration, timber harvesting on forest lands, grazing rights, and recreational sites. The major problem with quasi divestiture by the State via an extension of leasing is that lease terms would be influenced, if not governed, by political rather than by market processes. This provides incentives for the potential holders of leased grazing rights, cutting-planting rights, wilderness use rights, and so forth to lobby for favorable terms, such as grandfather rights, road subsidies for easier access to leased tracts, and the relaxation of controls on overgrazing.

[5]Ibid., p. 67.
[6]Ibid., pp. 225–30.

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Just because leasing is widely used in the private section, does not imply that it can be used efficiently in the public sector. Private leasing contracts are immensely variable in creating property rights arrangements that fine tune resource use to the preferences of *both* demanders and suppliers. Suppliers have an incentive to conserve capital value and, therefore, to negotiate arrangements that limit demanders' ability to overutilize resources. Where such arrangements are not feasible—e.g., because of monitoring costs—there is an incentive to sell rather than lease the land to user owners. Hence, *the own-or-lease decision is itself a market disciplined decision* with infeasible lease arrangements failing to survive. Private landowners who lease their property are not pressured into a "land of many uses" political philosophy, which I suspect is a euphemism for common property mismanagement. Private owners have an incentive to see that such property is leased, when feasible, to its highest-valued uses, net of deterioration costs. The history of governmental land management and leasing policies does not inspire confidence in the proposition that the political process can even come close to emulating these sophisticated market property rights processes.

Long-Term Leasing with Pullback Modifications

Marion Clawson has suggested an innovative new public institution that could make the increased leasing of federal land politically feasible.[7] Under Clawson's proposal, any organization or individual could make application to lease a tract of land for any purpose satisfying the applicable law. Within a limited time after filing the application, any other person or organization could file a so-called pullback application for some part of the land area specified in the original application. The pullback applicant would have to meet the same terms that apply to the original applicant. Thus, a forestry firm might apply for cutting-replanting rights on a tract of Forest Service land, and the Audubon Society might file a pullback for one-third of the tract to be preserved as a wildlife refuge. Alternatively, or in addition, Kampgrounds of America might file to pullback a section for a commercial campground. The idea is to force various competing potential users to bargain with each other.

This is a thoughtful proposal, which, as I interpret it, has the following constructive features:

1. It would attempt to substitute economic for bureaucratic criteria in the evaluation and allocation of public land to competing uses.

[7]Marion Clawson, "Public Lands Revisited" (unpublished manuscript, Resources for the Future, Washington, D.C., 1981).

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2. It seeks to increase the incentive to conserve replenishable resources through decentralized management and control over public lands.

3. It would promote the economic development of land for recreational wilderness, and natural resource extraction and harvesting purposes in a manner that would attempt to balance these conflicting uses through the lease challenge (pullback) procedure, forcing conflicting group interests to be reconciled through bargaining.

4. It attempts to channel more environmentalist-controlled income into the direct control, management, and preservation of wilderness resources. The social objectives of environmentalist groups would have to be translated into a willingness-to-pay for preservation.

The proposal does, however, contain a number of defects that would prevent or limit the achievement of these desirable objectives:

1. The present public land management bureaucracy is likely to press for as much control as possible over lease terms, by adding detailed monitoring provisions, for example. Bureaucrats will want such controls to reflect their employment-creating and budget-maximizing needs, and these criteria will not be equivalent to the cost-constrained incentives owners face to manage the resource in a way that maximizes its net capital value. Bureaucrats are not evil, but they will consciously or unconsciously look out for their own interests.

2. Administratively, whatever compromise level of control over lease terms might ultimately prevail, bureaucrats can be expected to implement and enforce these provisions to maximize their own benefits, not those of a surrogate owner.

3. A provision that allows one party to intervene and acquire for its own purposes some portion of a tract that another party has attempted to lease (provided that the second party meets the lease terms of the first) is unnecessarily complicated. The bargaining and strategic positioning among the multiple parties (including, perhaps, the leasing agency of the national government) would lead to high transaction costs, a deadweight loss directly attributable to the institution. A cleaner, lower-cost means of introducing the disciplinary function of the market is to allow "challenging" parties to simply bid away the rights sought by the first, or any, party. It seems likely that the simplest way to do this is by holding a competitive auction of the various lease rights that are associated

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with the land's use. What is needed is a means whereby each party can express its willingness-to-pay to use or prevent the use of particular land rights, rather than a "powerful tool (the pullback) to enable any interest group to curb the power of some other interest group, and to force negotiations which may result in acceptable compromises."[8] This sounds like a full employment program for lawyers. The problem is not to "curb power" but to allocate efficiently. This requires that wants—now expressible only in terms of political power—be expressed in terms of willingness-to-pay (bids).

4. A more fundamental design defect is the proposal's attempt to specify a detailed structure of price and quantity controls: royalties of 12.5 percent of oil and gas and five percent of gross output for metals; the requirement that only forestland whose productivity is 85 or more cubic feet per acre be available for lease; the requirement that timber be purchased at prices that reflect present stumpage prices for sawtimber and pulpwood, discounted as might be appropriate; per acre grazing rents equal to the value (market?) of one pound of beef; the provision that local governments may rent up to 15 percent of the federal land in their district at $1 per acre plus all costs; and so on. These provisions would substitute a regulatory maze for the current land management bureaucracy. It is not necessary or even feasible to try to control both prices and utilization patterns as specified in the leases. Given the lease terms (property rights of lessee), prices could be determined at auction.

5. Finally, a fundamental problem with the proposed institution is that it does not solve the lease-or-own decision allocation problem. As noted above, certain forms of land use may not be economically viable under lease contracts. A free market provides incentives to use lease arrangements only if there are net gains from exchange, including enforcement and monitoring costs.

Overall, I think the proposal is a valuable effort to modify existing institutions and to introduce some of the discipline of the market where essentially none exists. But the discipline of the market requires a market wherein each alternative, such as harvesting trees, must pass the test of opportunity cost. (Is the Sierra Club, perhaps in coalition with Friends of the Earth, willing to bid more than Potlatch Forests to control the timber rights on a given acreage?) In this regard, it is particularly important that the resources of the conflicting groups be used to signal values and, thereby, to resolve the conflict in favor

[8]Ibid., p. 25.

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of the highest-valued use rather than to have those resources dissipated in a costly legal bargaining contest.

Land Sales for Government Revenue

Historically, much of the original stock of public land in the United States was privatized by land sales to raise government revenue. The government's taxing power was narrowly limited until late in the 19th century, and the intensity of the colonial tax revolt meant that any attempt by the states or the Continental Congress to raise money by taxation to prosecute the Revolutionary War would have raised questions about who might be the real enemy. This anti-taxation mood persisted long after the Revolution and, coupled with the fact that state and federal governments were rich in land, made it all but certain that the public lands would be viewed as a major source of or as a direct substitute for government revenue. Consequently, during the Revolution the states offered land bounties to attract enlistments, and the Continental Congress did not hesitate to promise land it did not have (until states ceded the land to the United States beginning in 1784)[9] to obtain enlistments.

Bounties continued to be offered in the Indian Wars (many of the bounty lands were claimed by the Indians and could not be settled) and the War of 1812. When it became apparent that there was not enough land set aside to satisfy these claims, in 1830 Congress authorized claimants to land in the Virginia Military Tract to exchange their bounty warrants for Revolutionary War scrip (land office money), which could be used to enter land in Ohio, Indiana, and Illinois. Bounty lands and scrip continued to be offered in the 19th century, in 1847 to enlistees in the Mexican War[10] and under the Morrill Act of 1862.[11] In the latter, which set up the land grant colleges of agriculture and mechanical arts, the states in which no public land was available—mainly in the East, the South, and the Midwest—were given scrip in lieu of the land that was granted to Western states.[12] In addition to scrip and bounty sales, cash and credit sales were common throughout the 19th century.

Current proposals to privatize public land[13] tend to emphasize cash sales for government revenue: "Probably the best way (to transfer ownership) would be to sell the lands to the highest bidders and use

[9]Gates, pp. 51–52.

[10]Ibid., pp. 270–73.

[11]Ibid., p. 438.

[12]Ibid., p. 438.

[13]See, for example, Batten, "Toward a Free Market," and "Land for Sale," *Wall Street Journal*, January 25, 1982, p. 22.

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the returns to pay off the national debt and to reduce taxes."[14] These proposals meet criteria 1 and 2 and would certainly be acceptable to those concerned with the perpetual mismanagement of the public lands. However, they fail to meet the broad participation criterion. Although I consider this to be of less primacy than criterion 1, it is important for several reasons. First, given Congressional and bureaucratic behavior, it is not obvious that the proceeds from cash sales would be used either to reduce taxes or to retire the debt. More likely they will be viewed as a politically unconstrained bonanza to be spent by Congress for all the usual pet projects. There is at least a modicum of discipline in requiring legislatures to vote either deficits or new taxes to finance any increase in spending programs. Second, if the proceeds were used to reduce taxes or the debt, this would limit or rule out any direct benefits to those citizens who pay little or no taxes during the divestiture period. Third, divestiture is less likely to be politically acceptable if it is perceived as a program whose benefits are not widely shared by the population, and any serious program must be politically practical.

A New Proposal

Auctioning Rights to All Public Lands

The following proposal consists of many provisions defining the extent, procedures, and process of divestiture of the public lands. These provisions stem from the objective of satisfying the evaluation criteria outlined above. Although somewhat detailed for purposes of discussion and debate, they are offered not as a final set of divestiture provisions, but as an effort to encourage discussion and a new beginning on the public land policy issues that have plagued the republic since its inception.

1. All public lands would be divested over some reasonable but definite and limited horizon, say 20, 30, or 40 years. Divestiture would include all BLM, Forest Service, National Park, National Monument, National Recreational Area, continental shelf, deep sea bed, and military lands[15] over which the federal or state governments have jurisdictional claim.

2. All such lands would be partitioned into tracts or primary units

[14]Batten, "Toward a Free Market," p. 515.

[15]The government can lease back military reservations at market rates. By requiring all governmental facilities to pay opportunity cost, the true cost of such facilities must be included in current budgets, and land rentals have an opportunity to discipline facility location decisions. With this discipline, more defense might be obtained from a given budget by relocating bases that now occupy prime land sites.

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(e.g., quarter sections) as seems appropriate to the topography and certain classifications of land. Thus, land near urban areas might be partitioned into relatively small tracts, while very large tracts might be appropriate for the deep sea bed. Similarly, a tract might be defined by certain "natural" historical boundaries that would remain intact, e.g., the Grand Canyon or Canyon Lands National Park. Since the auction procedures described in provision 8 below allow the market, as expressed in individual bids, to determine the grouping of primary tracts into ownership parcels, it is better to err on the small side in defining these elemental units of land.

3. Corresponding to each tract of land would be a set of distinct, separable, elemental deed rights appropriate for each tract. These deeds could distinguish mineral, oil and gas, water, grazing, timber, recreational use, wilderness use, and surface or other rights not otherwise specified (e.g., agriculture). Again, within limits, too much detail is better than not enough (transaction costs become important if distinctions are not functionally atomic). In special cases, certain land-use restrictive covenants could be written permanently into a deed. Thus, the surface rights to the Grand Canyon might be permanently restricted to the use of the surface for recreational and wilderness purposes. Owners of subsurface rights could be enjoined from exercising such rights without the consent of the owner of surface rights, as is now common in property deeds. In such cases, for example, the owner of coal rights could not extract coal without a contractual agreement with the owner of surface rights. If the Audubon Society owns the surface rights to a tract, then it can negotiate whatever restrictions it pleases on the development of oil and gas resources, including prohibition of development.

4. Once divested, these tract deed rights would be freely transferable, individually or in any combination, by bequest, sale, assignment, lease, and so forth, as alienable private property. The purpose of subdividing rights by different land uses is to allow markets to fine tune allocations to tastes and use values. The bidding procedure outlined in provision 8 below will allow deed rights within and across tracts to be packaged in accordance with the willingness-to-pay expressed by the bids. Alienability allows secondary market exchange to repackage tract deed rights in response to changes in information and economic or social conditions.

5. Any individual with a documented historical claim to rights defined by one or more of these deeds would be assigned the appropriate deed(s). Thus, an established holder of BLM or Forest Service grazing rights would be permanently deeded these rights. For example, suppose a rancher has been granted permits to graze cattle on a

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10,000 acre tract of BLM land in return for an annual rental fee, R. This rancher would be assigned a deeded right to this arrangement, i.e. to graze the 10,000 acres in return for the payment R to whoever might be the subsequent private owner of the surface rights to this tract.[16] This has two purposes: (1) it prevents rights that have in some sense been legitimately acquired and subsequently acted on in the past from being arbitrarily expropriated; and (2) it converts an uncertain and perhaps poorly defined right into a well-defined, certain right. Consequently, it has the effect of changing the users' incentives for husbanding or otherwise maintaining the capital value of the right. BLM lands now subject to overgrazing would no longer be overgrazed unless that was the choice of the individual holder of the deeded grazing rights, who would now bear the full cost of any decline in the land's capital value. Under the BLM permit system, individuals may be poorly motivated to manage pasture resources efficiently, since the permits can be withdrawn or subjected to new restrictions. If the individual who is assigned the grazing rights deed desires full title to the land, he is free to bid at auction for the remaining deed rights. Alternatively, he may offer to sell his grazing rights deed at any time after the initial divestiture.

As already noted, where squatters' rights are sufficiently uncertain, poorly defined, or inadequately documented, it is questionable whether they should even be recognized by pre-auction deed assignment. If it is thought that squatters should be given preferential purchase rights, rather than deeded rights, then one possible procedure is to allow such individuals the right to acquire title ahead of the winning bidder at the ruling auction price under provision 8 below.

6. All tracts and the deed rights associated with them would be assembled into blocks. At regular intervals, say once a year or every six months, the deed rights for one block of elemental tracts would

[16]In the conference discussion of this proposal, Bill Niskanen pointed out that these rental fees have been increasing over time, and that some provision for such increases should be made. One possibility is for the obligations of the holder of the grazing rights deed to include provision for R to be adjusted for inflation each year. Alternatively, and less mechanically, the deed terms might make some provision for reopening negotiations on the lease terms every five years. I assume that provisions for changing fees are already part of the permit agreement between a rancher and the government agencies. If so, these contract provisions would be written into the grazing rights deed. The operating rule in recognizing "squatters' rights" should be to include in the deed no more and no less than those rights and obligations which are now part of what is the recognized practice or legal arrangement between the agency and the squatter, or permit holder. Should the deeded grazing rights be perpetuities? If they are perpetuities this would seem to maximize the incentive of the deed holder to maintain its capital value by good range management practices.

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be put up for sale in a sealed-bid auction. Each auction should be preceded, well in advance, by an official description of each tract and the corresponding conveyance instruments so that all interested parties can prepare their bids.

7. Bids would *not be denominated in money* but in public land share certificates, analogous to no par value stock certificates. Unlike the Revolutionary War scrip,[17] they would not be denominated in acres; and unlike the Mexican War scrip,[18] they would not be denominated in dollars. These certificates would be issued all at once by the government well in advance of the first land auction and would *only be redeemable in land at auction.* Each citizen might be granted 10 certificates, so there would be about two billion shares outstanding. These certificates could be freely exchanged, assigned, or bequeathed at any time over the entire divestiture period, and they would not expire until after the final auction. To facilitate a continuous market in these certificates, they could be listed for trading on stock and commodity exchanges, which would then be free to create futures or options markets in public land shares. Consequently, bidders for land at auction would always know from the current market price of a share what would be the dollar equivalent of a given bid in shares. A bid of two and a half certificates for the mineral rights to a particular tract of land would be equivalent to $250 if shares were selling for $100. Public land deeds won at auction would be paid for by surrendering certificates, which could be bought in the open market by winning bidders either before or after the auction. With an ongoing options market, bidders could always hedge their bids at auction by buying an equivalent quantity of certificate options and then exercising the options only if their bids were accepted.[19]

[17]Gates, p. 257.

[18]Ibid., p. 271.

[19]In the conference discussion Jim Dorn suggested an alternative to provision 7 as a means of reducing the transactions costs associated with the issuance of (and maintenance of a market in) land shares: Instead of issuing land share certificates for bidding, let the bids be denominated in U.S. currency. The proceeds of each auction would then be deposited in a mutual fund to be shared equally by all citizens. Each citizen would be free to "cash out" of the fund at any time. I see no objections in principle to this "mutual fund" approach. However, if this procedure is to take full advantage of the discipline of the market, fund share certificates should be issued in advance, and be fully transferable. (I would list them on the stock exchanges). But if this is done, then these special mutual fund shares become equivalent to my public land shares, that is, each will represent the same ultimate capital value, and will discount the same stream of future auction outcomes. One difference is that the mutual fund would have to be managed by someone (also there would be transactions costs in acquiring the mutual fund portfolio), but if there is a market in mutual fund shares such management would be subjected to some market discipline. I have argued elsewhere that the fact that

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8. The auction procedure would correspond to what has been called a "combinatorial" sealed-bid auction.[20] Each bidder would be free to bid on any right or any combination of rights for one or more tracts. He might bid for all the deed rights for a given tract, only the surface rights, only the oil and gas rights for some combination of tracts, and so on. The winning bidders would be determined by computing[21] those bid combinations that maximize the total economic surplus for the offered block of tract rights. This procedure permits elementary deed rights to be assigned to those package combinations valued most highly by the market (collection of bidders). Thus if the mineral rights to a particular combination of 10 tracts is more valuable to at least one bidder than are the component tract mineral rights to any collection of bidders, the highest combination bid for the 10 tracts would exceed the sum of the highest bids for the component tracts, and the combination bid would win. Similarly, if a particular combination of rights, say surface and grazing rights were more valuable in combination than separated, the highest combination bid would win over the sum of the highest separate bids. Another feature of this procedure is that it would extend the principal of the second price sealed-bid auction[22] to the combinatorial auction and thereby increase the incentive of each individual to submit bids equal to his or her maximum willingness-to-pay. Only if all bidders bid their maximum willingness-to-pay are we assured that land rights will be awarded to those who value them most.

The above proposal would recognize each citizen's right to share in the wealth created by privatizing the public lands. Individuals without competence or interest in the productive use of any of the auctioned rights would be free to sell their initial assignment of share

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holding company (a closed-end mutual fund) shares tend to sell for less than the market value of their investment portfolio suggests that the market discounts the value of anything that passes through an extra layer of such management. See Vernon L. Smith, "The Measurement of Capital," in John W. Kendrick, ed., *Measuring the Nation's Wealth*, Studies in Income and Wealth, vol. 29 (New York: National Bureau of Economic Research, 1964), pp. 343–344.

The mutual fund suggestion is a good one, and I would not want to prejudge its practical advantages relative to the issuance of marketable land shares. For example, the mutual fund, with marketable shares, might have greater popular appeal by virtue of its greater familiarity.

[20]See S. J. Rassenti, V. L. Smith, and R. L. Bulfin, "A Combinatorial Mechanism for Airport Time Slot Allocation," *Bell Journal of Economics*, Autumn 1982.

[21]Algorithms for this computation have been developed by S. J. Rassenti, "0-1 Decision Problems with Multiple Resource Constraints: Algorithms and Applications" (Ph.D. dissertation, University of Arizona, 1981).

[22]See William Vickrey, "Counterspeculation, Auctions, and Competitive Sealed Tenders," *Journal of Finance*, March 16, 1961, pp. 8–37.

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certificates in the open market. Oil companies, forest product companies, home builders, ranchers, farmers, outdoor recreation companies, private individuals, environmentalists, and environmental organizations would be free to purchase share certificates or receive them by donation or bequest. Environmental groups, such as the Sierra Club, Friends of the Earth, and the Audubon Society, instead of dissipating their resources in political action and lobbying for conservationist policies on public lands, could purchase certificates in the open market and accept certificate donations from their members and others. These certificates could be pooled and used to bid for the surface or other rights to any tracts they choose to be managed as they see fit. Similarly, timber or oil companies could bid for these resource rights only or bid for such rights in combination with surface rights. By awarding rights singly or in combinations to those uses that command the highest willingness-to-pay, the auction market would determine the most efficient way, initially, to separate or combine elementary land-use rights. As new information or conditions affecting land-use potential became available, secondary exchange could recombine or further subdivide combinations of land-use rights.

Common Pool Resources: Deeds to Water, Oil, Gas, and Fish

The surface boundary of land tracts is sufficient in most circumstances to provide well-defined property rights to cultivation, grass, timber, subsurface minerals, wildlife refuge or habitat, wilderness, and recreational resources. But surface boundaries are inadequate for defining rights to resources that migrate across or under such boundaries. The economic objective in defining property rights is to limit the quantitative extent of the rights to particular resources (i.e., to exclude). Hence, to say that I have grazing rights to a section of land means that I have the right to fence it and consume as much of the grass as I choose, subject to the limitations of my contract with the owner of surface rights. A timber right gives me similar control over all timber growing within certain boundaries. In each of these cases, the quantity of the resource to which I have a right is whatever quantity I find growing within my land boundary. Note that in these cases the resource quantity or quality need not be *certain* for the right to be well-defined. The market is entirely competent to discount for uncertainty. Also note that the moment I cross beyond my boundaries to graze or log I am poaching on my neighbor's preserve. But if fish swim and water, oil and gas flow under gravity or pressure, surface boundaries no longer delineate the quantitative extent of the resource and no longer define exclusion. What is needed in these

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cases is a property right defined in units of the resource itself. This principle has already been applied to cattle, parakeets, and dogs; but fish, water, and oil seem destined to take a little longer.

In many cases, I think it is feasible to create deeded rights to migratory resources. Consider, for example, the water supply for Tucson, Arizona. The city is located in a basin containing a natural subsurface aquifer estimated to hold 20 to 40 million acre-feet of water. All of Tucson's water is pumped from deep wells drilled into this aquifer. According to 1975 estimates, the natural recharge rate was 75,000 acre-feet per year and the consumption rate was about 225,000 acre-feet per year.[23] Anyone with a surface right to land has been free to drill into this water supply and start pumping. In addition to city and county water authority wells, individual residences, the University of Arizona, and surrounding farms, horse ranches, manufacturers, and mining companies own private wells that pump from this common water stock. Periodically, these wells have to be deepened as the water level declines. The city and county water authorities only charge for the cost of drilling, pumping, distributing, and managing this water system. The water itself is free. The politically popular solution to the water scarcity problem is the Central Arizona Project. Under this program, federal funds would be used to complete a canal from the lower Colorado River to Phoenix and Tucson on the assumption that, after California and the upper Colorado Basin states have dipped into the river, there will be enough water remaining for Arizona.

I propose the following:[24] Let the county issue water deed certificates for 30 million acre-feet of water. These deeds could be issued in proportion to the surface area held by landowners, but with adjustments for land used for residences, irrigated agriculture, mining, and industry. If feasible, adjustments could be made in proportion to a base period rate of water consumption. The objective would be to recognize squatters' rights to water, since the price of land has already capitalized the right to pump water freely.

Deeds could be issued in convenient denominations of 1, 5, 10, or fractional acre-feet of water. Any part of the rights conveyed by these deeds could be bought, sold, assigned, or bequeathed by contracts separable from contracts for the transfer of real property. Water deed transfers could be recorded in county or water authority records in the same manner as transfers of real property. This would allow

[23]See James L. Barr and David E. Pingry, "Rational Water Pricing in the Tucson Basin," *Arizona Review* 25 (October 1976): 1–12.

[24]See Vernon L. Smith, "Water Deeds: A Proposed Solution to the Water Valuation Problem," *Arizona Review* 26 (January 1977): 7–10.

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existing institutional procedures that have stood the test of time to be extended to water rights. Water deed prices would be freely negotiable to facilitate a continuous market in rights to draw on the existing stock of water. All pumps would be metered on farms, ranches, mines, and so on, as is now the case for metropolitan area residences. Each user would receive a monthly bill for the cost of pumping, distribution, and management (excluding private well owners who bear this cost directly) and a monthly bill denominated in fractions of an acre-foot of deed certificates to be surrendered for all water consumed (including private wells).

Every few years, depending on cost, the recharge of water to the aquifer could be estimated or perhaps the aquifer stock re-estimated, and the outstanding stock of deed certificates adjusted by a stock dividend to maintain equality between the stock of water and total claims on water. Alternatively, and perhaps more simply, one could adjust the redemption exchange rate for deed certificates. For example, if after 10 years the aquifer had experienced an 11 percent increase in inventory, then the redemption charge would be reduced so that the consumption of 10 acre-feet of water would require the surrender of only nine acre-feet of deed certificates. In this way, the exchange rate between certificates and metered water use could be adjusted to balance the demand and supply for water as an *asset*.

This property rights system could also be applied to a common property lake or ocean fishery in which it is feasible to estimate the stock of fish and meter the catch. Fishermen would own deeds to live fish, which would be surrendered as the fish were harvested, and would be free to use any technology (now extensively regulated to control catch rates) they pleased. Regular stock dividends or adjustments in the exchange rate between deeds to fish and fish consumed could be used to compensate for growth in the fish stock or variations due to other factors.

Similarly, rights to *discovered* oil and gas in petroleum reservoirs could be assigned in the form of freely marketable and transferable deeds based on the estimated size and extent of the reservoir stock.[25] The owner of the oil and gas rights on a tract of land with a proven well need not drill additional wells to exercise the right to oil and

[25]Note the need to distinguish between rights to undiscovered oil and gas, which include exploration rights, and rights to draw on discovered oil and gas reservoirs whose size and extent have been estimated. A knotty problem, which I will not attempt to treat in this proposal, is the process whereby rights to undiscovered oil and gas get converted into deeded rights after an oil or gas strike. What is needed is a way of extending the definition of traditional oil and gas rights in land to include descriptions of how those rights become rights to share in discovered common property reservoirs.

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gas. Instead the owner might sell his oil deed certificates to the owner of an adjoining tract on which drilling may be less costly or who has already drilled an efficient number of producing wells. The idea is to create a property rights system in which the value of oil reservoir stocks can be captured without producing the oil for market. In this way the decision to drill wells or to produce from existing wells can be based on the profitability of these activities rather than on a concern that others will capture any oil that is not recovered.

Amenity Resources: What Should We Do About Grand Canyon?

As I see it, potential models for the ownership and management of amenity resources are provided by private organizations such as The Nature Conservancy and the direct preservation programs of the National Audubon Society. The Nature Conservancy, with 100,000 members, has preserved approximately two million acres of land. They hire managers and use local volunteers for the stewardship of their 660 private preserves. The National Audubon Society, with 425,000 members, has preserved 250,000 acres including 76 sanctuaries and 90 preserves.[26] Perhaps the society's best-known sanctuary is the Rainey Wildlife Sanctuary on which oil companies have drilled several producing gas wells and ranchers graze cattle under rental contracts negotiated with the society.[27]

What special provisions, if any, should the divestiture plan make for Grand Canyon and similar national parks, monuments, forests and wilderness areas? There are many alternatives to be considered. In the following I discuss briefly a few possibilities, listed in increasing order of restrictiveness:

1. We could specify no restrictions at all, except perhaps to define tract size for surface rights as consisting of the current boundaries for some parcels. Thus the surface rights to Grand Canyon National Park or Yellowstone National Park, as these parks are now defined by the U.S. Geological Survey boundaries, might be kept intact. All other rights would be represented by deeds to elemental tracts, as appropriate. For example the unit might be a 640-acre section, with mineral, oil and gas, and timber (or grazing) rights to each section identified by a separate deed. Except where leases for these resources have already been granted, the winners

[26]The data on The Nature Conservancy and the National Audubon Society are obtained from Terry L. Anderson, John Baden, and Richard Stroup, "Report to the Department of Interior on Innovative Resource Management Strategies," February 1982, pp. 15–16; appendix, pp. 1, 3–4.

[27]See John Baden and Richard Stroup, "Saving the Wilderness," *Reason* 13 (July 1981): 28–36.

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of these deeded rights would have to obtain permission from (contract with) the owner of the surface rights before timber could be cut or wells could be drilled. Under this arrangement the owner of the surface rights to Grand Canyon, whether it was the Nature Conservancy or Atlantic Richfield, would have an incentive to seek donations and/or charge visitor fees to manage the scenic resources of Grand Canyon. As a consequence, willingness-to-pay (or donate) to preserve these scenic resources would become a factor in preservation which is not now present in public land-management policy. The greater is this willingness-to-pay for preservation, the greater would be the incentive of a private owner to negotiate restrictions on the development of subsurface, grazing or timber rights. Thus slant drilling from outside the park might be negotiated, where feasible, and timber cutting might be permitted under a program of replacement planting and selective cutting.

2. A slightly stronger version of alternative 1 would be to prohibit bids that combined surface rights with any of the other rights. This would force a separation in the ownership of surface and of other rights so that the development of the latter could only proceed by contract with the owner of surface rights. Under either 1 or 2 environmental groups desiring to manage amenity resources would have an incentive to concentrate their bids on surface rights. Radical environmental groups desiring to "lock up" petroleum or mineral resources could bid directly for these subsurface rights against commercial enterprises for the purpose of preventing their development. Anyone willing to pay opportunity cost would have the right to "lock up" any resource.

3. A more restrictive procedure would be to allow only "qualified" environmental organizations to bid on the surface rights to the national parks, and wilderness areas. This sets a dangerous precedent in giving special privileges to particular groups to be chosen by bureaucratic criteria. Although I have no doubt that a mix of ownership of scenic resources by Audubon, Nature Conservancy, and other such groups would vastly improve upon the National Park Service, I think any such "rigging" of the auctions would be unwise as a general policy. These organizations and their policies have evolved in an environment in which their land acquisitions have had to compete with that of commercial enterprises. They have flourished[28] under this discipline and there is no reason to

[28]Membership in conservation organizations increased dramatically from 1970 to 1980: Ducks Unlimited, 1,000%; National Audubon Society, 467%; National Wildlife Federation, 667%; The Nature Conservancy, 426%; Sierra Club, 129%. See Anderson, et al., "Report to the Department of Interior," p. 16.

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suppose that they need be given any preferential rights over commercial enterprises. Under present policies the latter are receiving preferential rights in the form of underpriced grazing permits, and road subsidies to cut public timber. Divestiture would eliminate such preferential treatment.

4. Restrictive covenants could be employed to limit the uses of national park or wilderness lands. Thus surface rights could be restricted to scenic or wilderness uses, suitably defined, as is now done in private deeds. An even stronger (and more inflexible) procedure would be to combine all extractive resource rights with surface rights and include a covenant prohibiting all development of these resources and requiring the land to be preserved as wilderness. I think such covenants would be very unwise as part of a general policy of divestiture of amenity resources. Any owner of surface rights would be free to follow development policies that are as restrictive as he pleases. But such owners have earned that right by paying the opportunity cost of the land; that is, by bidding more than other potential owners who would have followed less restrictive policies. Similarly, any winning bidder at auction should be free to resell the land with his own restrictive covenant provisions. Such an owner, having paid opportunity cost, would be free to impose a capital loss on himself by limiting his resale market with a restrictive covenant. There is a vast difference between the government auctioning certain public lands with restrictive covenants attached and The Nature Conservancy buying land in the open market (or acquiring it by voluntary gifts), then reselling or leasing it with restrictive covenants. The latter is a market disciplined decision whose cost is born privately, while the former is not disciplined by an opportunity cost test and the cost is born publicly.

Conclusion

The divestiture proposal in this paper is characterized by the following principal features: (1) It is "fair" in the sense that all citizens would share equally in the value of the 628 million acres of public land that would be capitalized into the market price of land share certificates, and all would benefit from the productive opportunities created by divestiture. Of course it need not be "fair" in terms of ultimate outcomes since individuals and organizations will differ greatly in terms of how they put these opportunities to work. (2) Elementary property rights would be defined by deeds to the various functional uses of unit tracts of land. The size of ownership parcels,

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and the manner in which use rights to the land are combined into packages of ownership rights would be determined by the market—in the primary auction by a combinatorial sealed-bid mechanism, and subsequently by exchanges that could separate or repackage tracts and rights in response to changing information and economic conditions. (3) The expropriation of "squatters rights"—rights already recognized by the government (for example, outstanding BLM grazing permits)—would be avoided by deed assignment to these individuals. (4) The bidding mechanism provides an incentive for combination bids to express "true" value (maximum willingness-to-pay), by guaranteeing that except in rare cases (for example, tied bids) the winning bidders will pay prices that are less than the amounts bid. Technically, this procedure is analogous to the "second price" sealed-bid auction for a unique object. The effect is to maximize allocative efficiency. (5) The proposal provides opportunities and incentives for environmentalists and their organizations to participate directly in the ownership and management of amenity resources by bidding for the surface rights to park and wilderness lands. (6) In the case of certain common pool resources such as ground water and fisheries, it is proposed that the appropriate governmental unit issue deeded certificate rights to unrecovered ground water and to live fish by species. These transferable and marketable certificates would then be surrendered in payment for extracted water or for landed fish. Equality between the stock of outstanding certificate claims and the estimated stock of the resource could be maintained by periodic adjustment of the surrender terms of certificates to reflect updated estimates of the resource stock. This procedure, in effect, creates exclusive marketable property rights in common property resources, which allows the natural scarcity of such resources to determine their prices and thereby discipline the individual owner's decision to extract the resource.

Many individuals and groups may oppose the divestiture of public lands because they believe that only the government can be trusted to preserve and beautify such lands. (This view receives intellectual support from economists who perpetuate the myth that the theory of market failure in the presence of public goods implies, *ipso facto*, the need for government production, ownership, and management of such goods. But this is a non sequitur, since the same economic logic leads to the theory of government failure in providing public goods through majority rule, and bureaucratic, processes.) Other individuals and groups may oppose divestiture, though they strongly disapprove of public land management policies, because they hope to change those policies. I think both views are naive in their image

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of the reality of public land management, and of the efficacy of resource allocation and management by political processes. The proposal outlined in this paper is unlikely to be received with favor, initially, by environmentalists or by many economists with well-intentioned concern for the existence of "public good" type externalities in amenity resource use. I share the concerns of both groups, but I think it is time to get beyond superficial market failure theorems that ignore the role of property rights and institutions in a market economy. Intellectually for economists the problem is to identify those property right characteristics that have allowed private markets to succeed, to develop some principles of the relationship between property rights and market efficiency, and to ask how and at what cost these principles can be applied to public resource allocation problems.

For environmentalists it is important to get beyond the visceral misidentification of government with the proper stewardship and husbanding of such resources. It is also important to realize that the public management of lands, which is subjected to a spectrum of conflicting political interests, creates common-property-like incentives to overgraze grassland, overcut some forests (but undercut others), overcrowd many parks, and so on. And where public land management encounters weakly organized political opposition, the budget-expanding incentives of government agencies tend to dominate policy determination. This is particularly evident in the four-score history of mega-dam construction by the Bureau of Reclamation and the Army Engineers. No private power company, no consortium of such companies, and no industrial combine would have wasted its capital by flooding 186 miles of the Colorado River from Glen Canyon to Cataract Canyon then followed with a downstream proposal to flood Marble Canyon and Grand Canyon behind two great new dams. Neither is it an efficient use of environmentalist resources for the Sierra Club to have been obligated to carry the narrowly successful political battle that—for the time being—has blocked the Bureau of Reclamation drive to complete these projects. Everyone would benefit if the funds and effort expended by environmental groups were diverted from political action to the direct acquisition and management of amenity resources. Similar benefits would result if the expenditures by oil, forest product, ranch and mining interests to influence the leasing policies of public land management agencies were channeled into the direct acquisition and development of these subsurface, grazing and timber resources.

The premise of this paper is that land utilization should be depoliticized and determined by economic criteria operating through mar-

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kets in which the various functional uses of land are recognized in the form of elemental property rights. Where public lands have already been set aside as primitive, wilderness or park areas, a case can be made for keeping the surface rights to these areas intact. Just as environmental organizations such as The Nature Conservancy and the National Audubon Society have acquired private land in competition with other users, it can be expected that environmental organizations, by diverting funds now being spent for political action, and by launching new fund raising efforts for direct land acquisition, would be able to bid successfully for many of these public lands.

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DIVESTITURE AND THE CREATION OF PROPERTY RIGHTS IN PUBLIC LANDS: A COMMENT

Dolores T. Martin

Professor Smith has provided us with a thought-provoking paper on the issues and problems—political and economic—surrounding the creation of private property rights in publicly owned lands. The manuscript focuses on a suggested mechanism to move from the current management of lands by bureaucrats to a system of private ownership for all public lands. The documented failure of collectively managed resources can be traced to the nature of the institutional constraints and the perverse incentives created for participants. Thus, any new policies we adopt to remedy the current host of inefficiencies must be examined in light of the mechanisms, processes, and institutions that can reasonably be expected to achieve the desired outcome.

The basic premise of the paper is that current government management of public lands meets neither efficiency nor equity objectives and that an alternative ownership arrangement where markets or market-like solutions are introduced would move more closely to the desired efficiency/equity norms. While I agree with Professor Smith that the current institutional arrangement is non-optimal and I support the proposition that privatization of these resources would tend toward a more efficient solution, I would like to discuss briefly some of the problems that he or I will face in effecting the solution.

First, there is the difficulty that when anything of value is given away, the potential recipients will attempt to structure the rules of the giveaway to their own benefit. In the case of 750 million acres of land, this problem seems almost insurmountable. The redistributional effects of a government divestiture program appear far and

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away more difficult to deal with than the efficiency aspects of the transfer. This is not the government giving away surplus cheese, but a divestiture of assets worth billions of dollars. It is inevitable that individuals and groups will spend billions of dollars in attempting to see that the resources are distributed in a pattern that most closely approximates their wealth maximizing position.

The procedure to establish the rights to the collectively held resources will be defined by the political market. Such a redistribution via the political process opens up the procedure to a vast range of under-the-counter, special-interest type of transfers where the relative political power or impotency of the participants comes into play. For example, the provisions for partitioning the public lands would be left up to the bureaucratic agency which currently has domain over the land areas; thus, the Forest Service or BLM determine the efficient tract size. Quite aside from the problems of incentives, the public land managers would be under enormous special interest pressure. Each politically powerful group would be encouraged to dissipate valuable resources in this lobbying effort while there would be no reason to believe that the parcels ultimately assembled are, to quote Professor Smith, "appropriate to the topography and certain classifications of land." While the previous divestiture programs encouraged misallocations due to uniformity of tracts, prices, and tenure, they did have the advantage that bureaucratic and special interest manipulation was limited.

Further, as Professor Smith stresses, to be politically acceptable any program of divestiture must be perceived as fair, both ex ante and ex post. Under the proposed land share certificate scheme all citizens would have equality of opportunity to participate, thus, ex ante equality should be satisfied. The difficulty would come with the operation of the divestiture process as various segments of the public would be systematically benefited or harmed by the policy. We are all well aware of the connection between political power and income redistribution policies, thus, even if certificates are fully marketable, individuals may feel that the outcome of the process is biased toward the economically and politically powerful. It seems to me that this would be a problem, even if all participants recognized the current mismanagement generated by collective ownership.

For example, the average citizen may well believe that the National Forests are mismanaged and still oppose a policy of turning these resources over to the private sector. The individual may perceive that the redistributional aspects of the divestiture program swamp any efficiency gains that he might receive. The transfer of property

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rights leaves the taxpayer/citizen in an inferior position vis-à-vis the better informed and better financed participants in the market.

Second, it is not obvious to me that simply transfering the ownership of the resources away from the government will necessarily lead to an improvement in efficiency. The underlying argument for divestiture is that bureaucratic managers do not bear the consequences of the resource mismanagement while the discipline of the private market would force resource owners to take these consequences into account. However, it is reasonable to assume that a substantial portion of the resources would be transfered to non-profit clubs, such as Citizens to Save the Niobrara, Friends of the Earth, Green Peace, etc. These organizations, operating within their ideological framework, may be equally unresponsive to opportunity costs. An additional problem would arise in the treatment of these clubs during the bidding process. Professor Smith would allow these organizations to form coalitions to gain land share certificates, thus, some secondary criterion to differentiate bidders would be needed or alternatively a suspension of anti-trust laws to allow all like-interested groups to form bidding coalitions in order to bundle the rights to an optimal-sized parcel.

The fact that the current system of public land management is generally held to be inefficient and inequitable does not lead to the inevitable conclusion that divestiture is the superior solution. As assets are not homogeneous and not managed by the same set of institutional rules, it is likely that the degree of governmental mismanagement may vary vastly over the resources; therefore, for a number of resources the conservation of capital value via leasing may present a superior alternative to divestiture. Smith rejects leasing as a viable means to increase resource efficiency due to the difficulties of lease terms being set by a non-market process. For divestiture of certain resources, there appears to be an equally difficult problem. Consider the case of either leasing or selling the Grand Canyon. The disadvantage of leasing lies with the governmental monitoring of the lease terms and the inherent problem of structuring incentives so that the bureaucratic overseer performs the function efficiently. One possible solution to the incentive problem might be for the government to lease monitoring rights as well as use rights. With divestiture, you must rely on the foresight of bureaucrats and politicians to negotiate a set of restrictive covenants that would cover all future contingencies that might impact adversely on the use of the canyon. The conceptualizing of the optimal property right restrictions would be incredibly complex and the contracts difficult to execute. It is not

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obvious to me whether the discounted stream of mismanagement costs would be greater from divestiture or from leasing.

The structure of property rights to resources to be auctioned will be delineated not on the basis of optimal use but rather by the political market. The interaction between various bundles of property rights appears to make the likelihood of maximizing the certificate value very difficult. For example, the political market will ultimately decide for the Bob Marshall Wilderness Area what structure of property rights is to dominate. Assuming that no contingency bids are allowed, the willingness of the Sierra Club to submit a sealed bid for any portion of the land will depend upon land-use restrictions established prior to the auction. Professor Smith's plan for ranking order of rights attempts to take the divestiture plan out of the political arena. However, by the very nature of the process established, rent seeking and political manipulation are encouraged.

An immediate improvement in resource efficiency is suggested by Professor Smith's very interesting mechanism to formalize property rights where quasi-rights to public lands currently exist. In the case of the water supply for Tucson, this proposal for granting private property rights would appear to be characterized by efficiency gains that more than offset the redistributional aspect. There must be many instances in the 750 million acres managed by the federal government where this type of procedure could be initiated.

In conclusion, introducing markets and market-like procedures into public land management has a certain basic appeal to economists. The question of how we can best achieve the benefits inherent in the private land market and best avoid its inefficiencies is certainly well worth exploring. Professor Smith has given us a very interesting set of criteria and procedures as a focal point for the discussion and debate of alternatives to current public land management. The high price that society is paying for the failure of the current system to efficiently husband our natural resources gives increased urgency to the implementation of alternative institutional arrangements.

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ENDOWMENT AREAS: A CLEARING IN THE POLICY WILDERNESS?

Richard L. Stroup and John Baden

Introduction

Nearly everyone agrees that in terms of general welfare, title to some land should be held by the federal government. While some might believe that the federal government should control only the White House grounds and Arlington Cemetery, most would include military bases, national parks and monuments. Some would go much further. In general, however, most resource economists and policy analysts who are knowledgeable about federal land management agree that all too frequently, current practices are inequitable, environmentally destructive, and economically inefficient.[1]

These policy outcomes may surprise some people; however, they are the predictable consequences of the lack of private ownership.[2] The problem is not one of incompetent or evil-minded bureaucrats, but rather a faulty incentive structure within government. It is much

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[1]There is a vast body of literature dealing with these problems. See, for example, John Baden and Richard Stroup, eds., *Bureaucracy vs. Environment* (Ann Arbor: University of Michigan Press, 1981); William Hyde, *Timber Supply, Land Allocation, and Economic Efficiency* (Baltimore: Johns Hopkins University Press, 1980); Gary Libecap, *Locking Up the Range* (Cambridge, Mass.: Ballinger Press, 1981); Richard Stroup and John Baden, "Property Rights and Natural Resource Management," *Literature of Liberty* 2 (September–December 1979): 5–44; and idem, *Natural Resources: Myths and Management* (Cambridge, Mass.: Ballinger Press, 1982).

[2]For a thorough treatment of the problems that arise from common ownership of a resource, see Garrett Hardin and John Baden, eds., *Managing the Commons* (San Francisco: W.H. Freeman, 1977).

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easier to blame government officials for "mismanagement" than to search for institutions that protect and efficiently utilize our lands and natural resources. Indeed, the search for "better bureaucrats" misses the point: decisions about land and resource usage are made on the basis of information and incentives, and current institutions too often generate poor information and perverse incentives.

The importance of the linkage between private ownership, individual freedom, and economic efficiency was clearly recognized by the framers and supporters of our Constitution. They saw the dangers and difficulties inherent in government land ownership, and were opposed to any significant holding of land by the federal government.[3] Consequently, during the first 100 years of our nation's history, there were systematic and largely successful efforts to privatize the federal lands. Although there were cases of fraud and abuse, the transfer of public land to private, profit-seeking entrepreneurs enhanced economic efficiency and freedom.[4]

During our nation's first century, land and natural resources were relatively abundant and cheap compared with capital and labor. In such an environment, property rights in land were often not worth establishing or enforcing. It also made economic sense to harvest natural resources at a rapid rate. Over time, as the value of land and natural resources increased because of population growth, industrialization, and technical progress, property rights emerged and encouraged conservation. As a result, resources were used more efficiently in ranching, mining, and water projects.[5]

In the last quarter of the 19th century, eastern patricians reacted to the privatization drive, and called for a counter-revolution. This

[3]See Alexander Hamilton, John Jay, and James Madison, *The Federalist*, Henry Cabot Lodge, ed. (New York: G.P. Putnam, 1895). See also James Thruslow Adams, ed., *Jeffersonian Principles* and *Hamiltonian Principles* (Boston: Little, Brown & Co., 1932); and Adam Smith, *The Wealth of Nations*, vol. 2 (London: George Bell, 1892), pp. 243, 250, 350.

[4]For an examination of how government land policy actually encouraged fraud and waste with respect to timber resources, see Gary D. Libecap and Ronald N. Johnson, "Property Rights, Nineteenth-Century Federal Timber Policy, and the Conservation Movement," *Journal of Economic History* (March 1979), pp. 129–42.

[5]The evolution of property rights to common property resources was first articulated in Harold Demsetz, "Toward a Theory of Property Rights," *American Economic Review* (May 1967), pp. 347–59. See also Terry L. Anderson and Peter J. Hill, "The Evolution of the American West," *Journal of Law and Economics* (April 1975), pp. 163–79; idem, *The Birth of a Transfer Society* (Stanford, Calif.: Hoover Institution Press, 1980); idem, "Property Rights as a Common Pool Resource," in *Bureaucracy vs. Environment*, pp. 22–45; and John Baden, Richard Stroup, and Walter Thurman, "Myths, Admonitions, and Rationality: The American Indian as a Resource Manager," *Economic Inquiry* (January 1981), pp. 132–43.

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led to the establishment of the National Park System, the Forest Service, the Bureau of Reclamation, the Bureau of Land Management, and in 1964, the Wilderness System. The federal government's consistent failure to efficiently utilize public lands—to find the optimal mix between recreational and other uses—suggests that it could be time for another revolution. Of course, the recent "Sagebrush Rebellion" strengthens that notion.

We have yet to encounter a thoroughly convincing argument that federal government ownership and control of vast amounts of land is superior to private ownership. Under the current system of public ownership and management by politically-directed bureaucrats who frequently seek to expand their agencies, taxpayers all too often find themselves subsidizing the destruction of environmental quality and forced to use resources in an extraordinarily costly manner.[6] Nevertheless, market failure, although sometimes exaggerated in importance, does exist. Common pool resources, public goods, free-rider possibilities, and externalities at times generate significant problems that are difficult to deal with in accord with the rule of willing consent.[7] Under such conditions, there does appear to be a case for a governmental role in resource management. (Whether market failure or governmental failure is more significant is an empirical question that deserves further research on a case-by-case or resource-by-resource basis.)

It is precisely in those areas where some justification for government involvement may exist that the difficulties are most severe. Important policy issues in natural resource management share two characteristics. First, they are typically complex. Whether one is dealing with nutrient cycling in lodgepole ecosystems, the population dynamics of feral horses and burros, or with predator control, interdependence among variables predominates. Thus, the resultant relationships are often counter-intuitive, indirect, and amenable only to rigorous scientific investigation. Second, natural resource issues are often emotional. Clear-cutting, mineral exploration in wilderness

[6]See *Bureaucracy vs. Environment,* especially papers by Barney Dowdle, "An Institutional Dinosaur with an Ace: Or How to Piddle Away Public Timber Wealth and Foul the Environment in the Process," pp. 170–85; William F. Hyde, "Compounding Clearcuts: The Social Failure of Public Timber Management in the Rockies," pp. 186–202; and Ronald M. Lanner, "Chained to the Bottom," pp. 154–69.

[7]Francis Bator, "Anatomy of Market Failure," *Quarterly Journal of Economics* (August 1958), pp. 351–79; and James Gwartney and Richard Stroup, *Economics: Private and Public Choice,* 2d ed. (New York: Academic Press, 1980), chap. 30.

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lands, or controlling wildlife that prey on domestic livestock generate heated reactions.[8]

Unfortunately, the public (taxpayers) have little incentive to understand what has been called "the new resource economics."[9] Special interest groups like the Sierra Club, therefore, have been able to dominate the policy debate. Slowly, however, things are beginning to change. Members of the Reagan Administration, recognizing the problems associated with public ownership, developed an Asset Management Program that addresses some of the more irrrational patterns of federal land ownership and management.[10] Although the Administration has rejected wholesale privatization, its effort to improve the efficiency of land and resource usage via transfer to the private sector of a limited amount of federal land, if successful, will be a change from previous administrations. Several others have prepared such initiatives, but none succeeded. The remainder of this paper deals with the Reagan Administration's Asset Management Program and proposes a further method of improving land-use and resource efficiency: the establishment of wilderness endowment areas.

The Land Sales Component of the Asset Management Program[11]

A third of the nation's lands, over 700 million acres, is owned by the federal government. Of this perhaps two to five percent will be placed on the market for sale. The proceeds from the sale of these lands are expected to be several billion dollars, and are intended to be earmarked to reduce the federal debt. In addition to raising revenue for the Treasury, the partial privatization of federal lands will increase the efficiency of these lands, and stimulate economic growth. If the Reagan program succeeds in reducing the national debt (hence, future taxes) and achieves faster economic growth, there will be equity as well as efficiency gains.

Privatization and divestiture are terms commonly used to describe (and deride) the Asset Management Program. Despite persistent and

[8]Gwartney and Stroup, *Economics*, chap. 32; and Stroup and Baden, "Property Rights and Natural Resource Management," pp. 14–17.

[9]See Terry L. Anderson, "The New Resource Economics: Old Ideas and New Applications," *American Journal of Agricultural Economics* 64, no. 5 (1982); also, Richard Stroup and John Baden, *Natural Resources: Myths and Management*, Ballinger Press, forthcoming.

[10]Assistant Secretary Garrey Carruthers' Testimony Before the House Subcommittee on Public Lands, September 28, 1982, on the Asset Management Program.

[11]A version of this section was presented by Richard Stroup to the Senate Subcommittee on Public Lands, Energy and Natural Resources Committee, June 14, 1982.

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growing evidence that our nation's experiment in land and resource socialism has failed, many commentators still support public ownership and have strongly objected to the proposed federal land sales. The most prominent critics have based their objections on caricatures of the program and of the results of private ownership.

The Rationale for the Asset Management Program

There are two key requirements for a successful organization: (1) good information and a constant feedback on results, and (2) decision-maker accountability. When these requirements are met, decision-makers have the incentive and ability to seek out and heed the appropriate information about relative values, as demonstrated by willingness to pay. When rights to a resource, such as land, are held privately, asset valuation and the profit-loss test of the market provide the incentive for efficient use. For example, if the owner of a ranch overgrazes his land, causing erosion and undesirable changes in species composition, the market value of the land will fall. Only if short-run benefits outweigh the long-run costs represented by the decline in land value will "overgrazing" make economic sense. A private owner, therefore, will be able to enlarge his wealth only if he allocates resources to their higher-valued uses, and optimally over time, as determined by the dollar votes of consumers. If he is blind to consumer preferences, he will lose control of his resources to more alert or better disciplined entrepreneurs.[12]

The value of a piece of land is the highest price any person or group will pay for the amenities and commodities that may be produced by the land. People are increasingly demonstrating a willingness to pay for amenity and recreational land uses in the same way they pay for nonrecreational uses, such as timber-cutting rights.[13] Several examples of the increased value consumers are placing on the amenities that land offers and the market response to changes in

[12]Economists of the Austrian school stress the role of the entrepreneur who moves resources to more highly-valued uses in his search for profit. Two classical works in this mold are Ludwig von Mises, *Human Action* (New Haven, Conn.: Yale University Press, 1949), and Israel Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1973).

[13]On the idea that recreational and access enhancement can be profitable for large landowners, see William C. Dennis, "The Public and Private Interest in Wilderness Protection," *Cato Journal* 1 (Fall 1981): 373–90; idem, "Private Lands and Public Amenities," unpublished, 1982; Frank Graham Jr., "A New Hand in the Wildlife Business," *Audubon,* May 1979, pp. 94–113; "Landowners Charging Fee for Hunting Rights," *Bozeman Daily Chronicle,* September 12, 1982, p. 6; William L. MacDougall, "Private Money Pours In to Save Green Space," *U.S. News & World Report,* October 26, 1981, p. 64; and Robert J. Smith, "Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife," *Cato Journal* 1 (Fall 1981): 439–68.

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relative land-use values come to mind. Timber firms are finding that managing their lands for hunting, camping, and other recreational uses can be very profitable. Some timber companies have also found it profitable to sell attractive parcels with restrictive covenants as second homesites.

In a particularly interesting case, ranchers in western Texas, where there is very little public land, have found that managing some of their land primarily for game animals provides more revenue than they get from traditional crops and livestock. Some ranchers have even imported exotic game animals from Africa and used elaborate fencing to contain and manage their herds. Other operators cater to hunters with smaller budgets. In each case, there is a strong incentive to find the optimal land-use mix and adjust that mix over time. By responding to market signals, both the private owners and the consuming public gain. Moreover, breeding populations of exotic animals have their gene pools preserved under private ownership, while their kin are exterminated on the open-access commons of their original habitat.

We should not be surprised that private land management is adaptive, for owners are rewarded both for successful innovation and for providing services to a broad spectrum of consumers. The Astrodome in Houston welcomes an extraordinarily complex array of users, as does the Empire State Building. In both cases, masses of people are accommodated, but so are those people who seek special attention. Bleacher seats and private boxes are provided as are plush office space and lunch counter seats. Of course, those who want the plusher surroundings, shared with fewer people, must pay more under private ownership. In such situations, not only does the market provide information and incentives to the supplier, but the user is also given information and incentives in the form of market prices he must pay.

Natural resources are not free. This is as true of amenity services as it is of material goods and services. Scarcity has always been with us—we simply cannot have all of what we would like. When rights to resources are privately held and exchangeable, prices bid and asked are the signals that draw the resources into the most highly-valued uses, giving producers and consumers the information and the incentives to supplement and reinforce the goodwill and charitable urges managers may have. In a market setting with privately held, transferable property rights, he who benefits others, benefits himself.[14]

[14]Terry L. Anderson and P.J. Hill, *Birth of a Transfer Society;* Stroup and Baden, "Property Rights and Natural Resource Management"; and Eirik Furubotn and Sve-

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Problems with the Private Sector

In a world of human fallibility and imperfect information, all systems of organization have flaws. The market system is no exception. A market system breaks down when private rights are not well defined, not easily enforced, or are not transferable under terms desired by the owners and potential buyers. This situation is commonly referred to as "market failure" and occurs most frequently with natural resources when certain costs or benefits of the resource do not accrue to the owner.[15] For example, one cost of overgrazing a piece of land might be that erosion pollutes a creek running through the land. If the pollution harms unowned fish downstream or if the owner is unable to benefit from preserving fish in the creek, he will have an incentive to overlook these "external" costs, and continue to overgraze. Similarly, if the deer that use his ranch for forage and cover are unowned and if he cannot benefit from their existence or taking, he may be unwilling to incur even small costs to aid the deer population. Providing deer habitat is an example of an external benefit. An extreme case of external benefit is the public good.[16] A person who owns Mt. Rainier would have trouble benefiting from preserving its pristine appearance for the benefit of Seattle residents. Since the owner could not exclude those not paying for the view of the mountain, too little weight might be given to preserving that view.

Whenever there is market failure, there is reason to ask whether government control, either through regulations or ownership, might not improve the situation. In the case of water pollution, for example, the Environmental Protection Agency was created to help regulate the problem. But market failure by no means guarantees that government will do any better. To understand why some lands may be handled better privately, even with imperfect markets, we must apply the same critical reasoning to the governmental process as we do to the private market process. When we do so, government is also shown to be fallible.

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tozar Pejovich, eds. *The Economics of Property Rights* (Cambridge, Mass.: Ballinger Press, 1974).

[15]Bator, "The Anatomy of Market Failure," is the typical neoclassical viewpoint. For a property rights perspective, see Ronald Coase, "The Problem of Social Cost," *Journal of Law and Economics* (October 1960), pp. 1–44; Steven Cheung, "The Structure of a Contract and the Theory of a Non-Exclusive Resource," *Journal of Law and Economics* (April 1970), pp. 49–70; J.H. Dales, *Pollution, Property and Prices* (Toronto: University of Toronto Press, 1968); and Gwartney and Stroup, *Economics*, chap. 30.

[16]Paul Samuelson, "The Pure Theory of Public Expenditure," *Review of Economics and Statistics* (May 1954), pp. 387–89. See also Gwartney and Stroup, *Economics*, chap. 30.

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Analysis of Governmental Failure[17]

Under private ownership there is a close association between the authority to act and full responsibility for the action. Producers and consumers are constantly nudged by changing prices in the direction which others in the society want them to go. Anyone is free to ignore these signals from society, but only at his own expense. This linkage is almost totally missing in the public sector. In its place are formalized bureaucratic controls (red tape) and political mechanisms, such as elections. Unfortunately, neither political nor bureaucratic control provides enough information or adequate incentives to producers and consumers to make choices which are efficient for society. Five fundamental problems with public sector management and ownership can be summarized:[18]

1. In a democracy, intelligent voters have an incentive to be rationally ignorant about candidates and policy issues. Each recognizes that one vote is unlikely to be decisive, and that it is costly to obtain information. Moreover, they recognize that they cannot fully capture the benefits of an informed vote, nor will they bear the full costs of their ignorance. Hence, a great many intelligent voters will be largely uninformed on election day, simply because they are rational.[19] Dozens of polls, including one multimillion-dollar study done for Congress, confirms that the average American eligible to vote cannot even name his congressman. In contrast, when buying an automobile, the individual's dollar votes are decisive. The right decision means that the individual gets what is best for him, and symmetrically, he suffers most of the consequences of a wrong decision.[20]

2. Since most voters are rationally ignorant about most issues, special interest groups can have tremendous influence. In the case of a national forest, we can expect local timber buyers and processors to be keenly interested, informed, and influential regarding the man-

[17]Analyses of governmental failure can be found in James Buchanan and Gordon Tullock, *The Calculus of Consent* (Ann Arbor: University of Michigan Press, 1962); Gwartney and Stroup, *Economics*, chap. 32; William Mitchell, *The Anatomy of Government Failure* (Los Angeles: International Institute for Economic Research, 1979); William A. Niskanen Jr., *Bureaucracy and Representative Government* (Chicago: Aldine-Atherton, 1971); Mancur Olson Jr., *The Logic of Collective Action* (New York: Schocken Books, 1965); and Stroup and Baden, "Property Rights and Natural Resource Management." See also Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), pp. 140–49, 360, 378.

[18]Stroup and Baden, "Property Rights and Natural Resource Management," pp. 14–17.

[19]For an elaboration of this argument, see Gordon Tullock, "Public Decisions as Public Goods," *Journal of Political Economy* 79 (July/August 1971): 913–918.

[20]In principle, an exception would be the failure to consider the safety of his car for normally distant parties.

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agement of that forest. Similarly, if certain recreational users are well-organized, their special interest will also be represented. The interests of the majority of citizens, however, will be poorly represented. Most citizens will never know how their congressman voted on national forest policies. To be successful, any politician or political appointee must accommodate the interests of organized special interest groups. This is an unfortunate consequence of our present democracy (the best form of government, in our view), and stifles taxpayers' true preferences.

3. Government officials tend to act in a shortsighted manner because, unlike private owners of a resource, they cannot capture the expected future benefits from their efficient use of the resource. The lack of private property rights means that capitalization possibilities are absent for decision makers in the public sector.[21] Helping future generations at the expense of present voters, by wise husbanding of resources, is not likely to help the politician get elected or reelected today. Private owners, on the other hand, will carefully weigh the expected costs and benefits of their current decisions affecting resource efficiency, because their decisions affecting future resource values will be reflected in current market prices. Thus, the private owner of resources will have a much stronger incentive to heed the wants of future consumers than the politician will have to heed the wants of future taxpayers, who cannot register their votes for or against today's decision makers.

Under private ownership, the invisible hand of competition, spurred by the profit motive, will benefit present and future consumers; the inefficient allocation of resources over time will be penalized, while efficient decisions will be rewarded. Only to the extent that today's citizens are willing to sacrifice for the nation's future and reject short-run solutions to long-run problems will politicians have any incentive to expand their time horizons. However, the much weaker link between efficient choices and capturable rewards in the public versus the private sector means that we should not expect public officials to pay much attention to the future consequences of their current decisions.[22] Upon reelection, they can always blame someone else for

[21]When a private owner gives up current benefits to increase the future value of his resource, the present capitalized value of the added future productivity, as judged by the potential high bidders for the resource, is added *immediately* to the current market value of the resource, immediately adding to the owner's wealth. Actions which reduce the resource values in the future are similarly reflected immediately in a reduced resource valuation.

[22]For a comparison of market and collective allocation of resources over time, see Stroup and Baden, "Property Rights and Natural Resource Management," pp. 19–26; and idem, "Transgenerational Equity and Natural Resources: Or, Too Bad We Don't Have Coal Rangers," in *Bureaucracy vs. Environment*, pp. 203–16.

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the adverse effects of their past decisions. The private owner cannot: He alone will suffer the losses of inefficient decisions or benefit from wise ones.

4. Within government, there is little incentive for efficient policies *or* for efficient operating behavior.[23] The public decision maker is seldom in a position to personally gain from increasing efficiency (i.e., from cutting the cost of a given output), nor does he lose from decreasing efficiency. Indeed, it will often be politically advantageous for a politician to support a particular program with constituent beneficiaries even if the costs far exceed the benefits. The benefits will be concentrated on a special interest group, while the costs per taxpayer will be small and unnoticed. The perverse results under public ownership are well reflected by the huge deficits in federal grazing and other commodity programs.[24]

5. A voter must choose one candidate to represent him on hundreds of issues. Even a well-informed voter has a problem expressing his preferences on different aspects of public policy. Suppose that a voter likes his congressman's stand on forest management, but not his position on grazing land; He still has to vote on one or another of the "bundles" of stands on issues which each candidate represents. Moreover, he cannot even be sure how his congressman will vote after winning an election. In the private sector, consumers have a wide variety of choice and can change their dollar votes at any time. In the political marketplace, however, voters must decide on an incredibly large and complex package of issues offered by competing politicians. And unlike consumers, voters can only cast their votes during election years. This lack of flexibility in the political sphere makes it very difficult to reverse inefficiency within government.[25]

All five of these problems with government ownership and control suggest that even though markets are imperfect, they will often perform better than government in allocating resources. To the extent that effective private property rights exist, individuals will be held responsible for their actions. And, although private owners will frequently err, they will have a stronger incentive than government decision makers to rapidly recognize and correct their mistakes. Profit-

[23]John Baden and Richard L. Stroup, "Introduction" in *Bureaucracy vs. Environment*, ed. Baden and Stroup, pp. 1–8; and idem, "The Environmental Costs of Government Action," *Policy Review* (Spring 1978), pp. 23–36.

[24]See, for example, William F. Hyde, *Timber Supply, Land Allocation, and Economic Efficiency;* idem, "Timber Economics in the Rockies: Efficiency and Management Options," *Land Economics* (November 1981), pp. 630–36; and Gary D. Libecap, *Locking Up the Range.*

[25]Gordon Tullock, *Private Wants and Public Means* (New York: Basic Books, 1970).

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seeking entrepreneurs will quickly utilize new information, because they can increase their wealth by directing resources to uses where consumers want them. The absence of this incentive within government is an important reason for "government failure."[26]

Mistaken Criticisms of Private Ownership and the Asset Management Program

Both private markets and governmental control are imperfect. It is realistic to criticize each, and there are circumstances under which each will fail. In addition to the valid criticisms that can be made of each system, current critics of the land sales component of the Reagan Administration's Asset Management Program voice a number of mistaken criticisms of the private sector.

1. Private ownership is often criticized as being environmentally insensitive. According to the critics, private owners are concerned with profit, not environmental quality. However, what these critics fail to recognize is that when individuals are willing to pay (make sacrifices) for environmental quality, they will also pay to enjoy environmental amenities. For instance, environmentally sensitive and controlled resort developments can be (and have frequently been) assembled by gaining control of entire mountain valleys. The land can then be resold in small parcels with carefully drawn protective convenants. Every parcel rises in value because each buyer knows that every nearby property owner must act to maintain a high-quality environment.[27]

People willing to vote for environmental quality should also be willing to buy it for themselves to use and hold as an investment. Just as shopping centers developed to provide attractive ambience, free parking and other "public good" amenities for shoppers, privately planned communities and recreational developments have responded to the increased demand for environmental and amenity

[26]On the relationship between private property and the efficient utilization of knowledge via the competitive market process, see Friedrich A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948). Two essays of particular importance in this volume are: "Economics and Knowledge," reprinted from *Economica* 4 (1937): 33–54; and "The Use of Knowledge in Society," reprinted from *American Economic Review* 35 (September 1945): 519–30. Also, see Friedrich A. Hayek, ed., "Competition as a Discovery Procedure," in *New Studies in Philosophy, Politics, Economics and the History of Ideas* (Chicago: University of Chicago Press, 1978).

For a discussion of the economic role of profits and losses, see Alchian and Allen, *University Economics*, pp. 287–98, and Gwartney and Stroup, *Economics*, pp. 580–84.

[27]A good example of such a development is the Big Sky resort area in south central Montana. Developers purchased an area of land large enough to maintain the integrity of the natural environment and at the same time established protective covenants to maintain that integrity.

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values. Of course, some big landowners have failed to follow these market signals. Some forest industry firms, for example, have been careless in preserving aesthetic values as they logged their own lands; but this practice has substantially lowered the value of their lands and adversely affected their profits. More farsighted firms, on the other hand, have profited from careful management and, in time, will tend to increase their share of forest lands and natural resources.

Direct liability is another way in which private property rights hold decision makers accountable. Consider, for example, the case of Love Canal. When Hooker Chemical was forced (by threat of eminent domain) to sell its carefully constructed Love Canal dumpsite to the local government, it took great pains to inform the public of the hazardous chemical waste. However, the school board members, who acquired the property, unlike the owners of Hooker Chemical, could not be held liable for damages. Consequently, their actions were understandably, but also tragically, inept. Nevertheless, the media chose to emphasize Hooker's initial dumping of the waste, rather than the care Hooker had taken in storing it and their unwillingness to sell the land. Hence, it was assumed by most people that Hooker had been negligent. Private-sector liability probably would have prevented the Love Canal problem. The physical containment of chemicals did not break down until the school board allowed excavation that breached the containment area. The claim here is *not* that those in the private sector have better intentions, but that the profit incentive forces them to pay attention to the consequences of their decisions. Even if Hooker officials were unconcerned about the future of the land, they faced strong incentives to care about their legal liabilities.[28]

2. Critics of privatization claim that "only the wealthy will enjoy private lands." One has only to look at such a valuable asset as the Empire State Building to realize that rich and poor alike can benefit from private ownership. The same is true of Manhattan's elegant restaurants, fast food chains, and Broadway theaters. All tastes and income levels are catered to. Rich people tend to get more, but in the private sector they must pay for it. The wealthy tend to be far better represented in government, but there they can pass their costs on to the less wealthy. From tax breaks to the provision of art, national parks, and the humanities, the rich tend to be subsidized in the political setting. (National park visitors, for example, pay a tiny portion of park costs, even though they generally have incomes far above

[28]The story behind Love Canal is elaborated in detail in Eric Zuesse, "Love Canal: The Truth Seeps Out," *Reason*, February 1981, pp. 16–33.

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average.) There has never been a major political system in which wealth and political power were not strongly correlated.

3. A final objection to privatization is that it disregards the preferences of future generations. The proponents of this view fail to understand the nature of private property. Transferable property rights cause current owners to take account of the future consequences of their present decisions. For the reasons already elaborated, private owners will immediately bear the consequences of their decisions affecting future resource values, in the form of increased or decreased property values and thus wealth. If their management decisions are efficient, the value of their assets will be bid up in the marketplace, and conversely. Meanwhile, recent news articles have detailed how city governments, pressed for funds, seek to maintain current services while neglecting to maintain capital assets for future utilization. In order to save a few tax dollars today, politicians are allowing subways, bridges, sewers, and roads to deteriorate, posing serious problems for the future. In the private sector, this would be costly *even in the short run*. To save $1,000 of maintenance expenditure at the cost of a $2,000 reduction in asset value would be foolish in the private sector. However, in the public sector, raising $1,000 by taxation is painful to incumbents, while the *future* expenditure of $2,000 is likely to be thrust onto another politician. In the private sector, a shortsighted individual will lose control of his assets to a person with superior foresight. But in the public sector this need not, and probably will not, be the case.

Summary

In brief, the land sales component of the Asset Management Program can be defended as a logical, efficient, and forward-looking part of the federal government's responsibility to the nation. Private ownership is a useful tool to ensure that current and future resource users, desiring both material and environmental services, can be served efficiently. Private owners are held much more accountable, both for positive and negative results, than are government officials, who are instructed to represent the "public interest." Both logic and evidence suggest that privatization, selectively and carefully applied, will be socially beneficial.

The Case for Wilderness Endowment Areas

Are Wilderness Endowments an Alternative to Privatization?

There is little theoretical or empirical justification for holding lands primarily devoted to commodity production in the public sector. The

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implications of the public goods argument and the free-rider problem suggest that a respectable case can be made for something other than fee-simple private ownership for amenity lands.[29] Wilderness lands present an interesting opportunity to design an institutional structure that will capture the benefits of both private and public sector organization while avoiding the inordinately high costs of public ownership and political control.

Given current resource prices, the overwhelming preponderance of wilderness lands established under the 1964 Wilderness Act serve their best use when managed as wilderness. Many of the wilderness lands are those that were not claimed under the various homestead, timber, stone, desert, or livestock provisions for 19th-century privatization. While there are exceptions, these lands tend to be remote, are at high elevations, have short growing seasons, are arid, or have a set of characteristics negatively associated with land value. It follows, then, that if held privately, most of these lands would continue to be used as wilderness.[30]

There are complications, however. While wilderness lands have a high value in the aggregate, at the *margin* their per-acre value as wilderness may be exceedingly small. Consider an analogy: Assume for a moment that wilderness is as critical to human survival as water. Are we willing to give up water, which is required for life itself, in order to get, say, minerals? Of course we are, to some extent and in most circumstances. Similarly, even one who values the existence of wilderness very highly will typically be willing to sacrifice *some* amount of wilderness to get sufficient quantities of other goods and services. Thus, wilderness may be highly valued as a requisite to the salvation of civilization, but it often makes sense to trade a portion of it for petroleum, strategic minerals, or other resources for which there are few substitutes in the short run. In most cases, the opportunity cost of enforcing the Wilderness Act is extremely small: We don't have to forgo easily extracted, highly-valued resources to preserve most wilderness areas. In these cases, the mineral, timber, energy, residential, or commercial uses of the land are of little, or even negative value: Thus, the land is best used for the wilderness values it produces. This, of course, is the easy case. Problems arise when high-valued, alternative uses are found for the wilderness lands.

We can never specify in advance what factors will change the

[29]For the classic argument, see John V. Krutilla, "Conservation Reconsidered," *American Economic Review* (May 1967), pp. 777–86.

[30]William F. Hyde, *Timber Supply, Land Allocation and Economic Efficiency*, and idem, "Timber Economics in the Rockies."

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evaluation of wilderness, or any other land, but we know they can take many forms. When crude petroleum sold for $3 a barrel, the oil in the Bridger-Teton Wilderness Area on the overthrust belt would not have been profitable to extract. The OPEC embargo, however, increased the value of oil and made it economically worthwhile to consider the Bridger-Teton for oil production. Yet this was prohibited by law. Other exogeneous forces, such as increments in knowledge, can also change the opportunity cost of preserving wilderness areas. Satellite photography, for instance, may make it possible to locate with some precision the deposits of strategic minerals or oil patches located on wilderness lands. Such knowledge would dramatically reduce the search costs associated with mineral development and increase the value of a developed deposit. While only half of one percent of any wilderness area may have value for mineral development, we do not presently know where that deposit is. It is possible that we will never have such information, but it would not be prudent to assert that such ignorance will always prevail. The important point is that an increase in knowledge can lead to an increase in the opportunity costs of preserving certain wilderness lands.

Evidence strongly suggests that most citizens believe that wilderness should be preserved, but public opinion is notoriously fickle. Smart money might bet that a major oil shock or strategic mineral embargo, coupled with publicity that these resources exist in quantities in wilderness areas, would yield a quick modification of the Wilderness Act. Should this occur, would the wilderness enthusiast prefer the lands to be managed by a naturalist like Aldo Leopold or by the Department of the Interior? We propose to give him that choice.

The Wilderness Endowment Board

Congress has officially designated 80 million acres as wilderness. In addition, there are another 149 million acres in various categories under study for recommendation as wilderness. The Wilderness Act of 1964 precludes all but passive management and protects wilderness areas from the costly and environmentally destructive activities of bureaucratic entrepreneurs in the public sector. Thus, deficit timber sales are not allowed, nor can wilderness areas be chained, terraced, or otherwise have their ecological integrity violated. Economically inefficient development is precluded. Unfortunately, environmental groups have failed to advertise these benefits of wilderness areas.[31] Given that Americans want to preserve wilderness lands, the

[31]John Baden, "Property Rights, Cowboys, and Bureaucrats: A Modest Proposal," in *Earth Day Reconsidered*, John Baden, ed. (Washington, D.C.: The Heritage Foundation, 1980), pp. 71–83.

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question becomes which lands and at what costs. We propose for discussion the creation of a Wilderness Endowment Board composed of private naturalists rather than public bureaucrats.

The board would not be established to promote the "public interest." Its singular goal would be to foster wilderness values. The leadership of established environmental groups would nominate members of the board to a joint committee of Congress. The board would consist of five members appointed to staggered seven-year terms. Members would be bound by the common law doctrine of "trust" and be responsible for preserving and enhancing wilderness values and for managing wilderness areas.[32] There are good reasons to argue for several such boards, each representing regions of the country, such as the Northwest and the Southwest. The board would have control, subject only to congressional veto, over the management of each wilderness area under its jurisdiction. The structure of the organization we propose would arrange information and incentives in such a way that *decision makers would further their narrow goals by acting as if they cared about the preferences of others.* This is in marked contrast to the behavior of the bureaucrats currently charged with managerial responsibilities. Although board members would not have residual claims on the resources, we can predict with confidence their behavior. If the board discovered that some small percent of a specific wilderness area contained highly-valued, exploitable resources, it could sell rights to that resource to the highest bidder. While wilderness land may have a market value of $100 per acre, a small tract of valuable mineral lands may yield millions of dollars per year. The board could then use these revenues to purchase land for inclusion in this national wilderness endowment area, or to buffer parts of it.

This scheme has significant advantages over any of the alternatives currently being considered in the policy arena. First, it is politically attractive: It would deal constructively with problems that currently generate conflict and ill will. It would be difficult to imagine, for example, that actions by the proposed endowment board would cause the president of the Wilderness Society to label a board member (as he recently did the Secretary of the Department of the Interior) "the worst thing that ever happened to America." Since the board would consist of individuals active in and responsive to environmental groups, we would expect such groups to support limited development when it would *advance* wilderness values. In such cases, envi-

[32]Joseph Sax, "The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention," *Michigan Law Review* (March 1970), pp. 471–546.

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ronmental magazines would advise their members and urge them to lobby Congress in support of development. Trading one acre of sagebrush and cactus for a thousand acres of alpine meadows and trout streams is likely to be perceived as a good deal.

This institutional arrangement would also effectively deal with the issues of reversibility and rehabilitation. With funds from a titanium mine or an oil patch in a western wilderness, the board can renovate lands that have been despoiled by insensitive mining, forestry, or agriculture. While some purists may argue that this task is impossible, that portion of the Great Smokies National Park that has been logged or farmed goes unnoticed by visitors. With funding, intelligence, and sensitivity, the healing process and reversion to wilderness may be shortened dramatically.[33]

The increased budgets generated by the wilderness endowment areas would both foster rehabilitation and make rehabilitation easier to implement by encouraging resource extraction in anticipation of reversibility. The Ayrshire Collaries in the Midwest and the abandoned Northern Pacific Coal Mines at Colstrip, Montana, provide examples of how environmental amenities can be increased by introducing ecological and topographical variation into a landscape. The Collaries were developed by Pierre Goodrich, with the explicit goal of improving the productivity and environmental quality of the land after the coal had been extracted. Because this goal was incorporated into the operation, increased land values resulted with relatively minor costs. The mines in Colstrip were merely abandoned, but after many years the area became a choice wildlife habitat and provided environmental amenities to residents of the area. Montana folklore holds that Colstrip residents were distraught when they learned that the Surface Mining Reclamation Act would cause the abandoned mines to be "reclaimed to original contours and vegetation," depriving them of valued environmental amenities.

In each of these cases, the amenity values of the land were apparently improved by mining. While amenity values are not the same as wilderness values, these examples suggest that mineral or petroleum extraction in a wilderness endowment area could be organized to preserve and foster wilderness values.

We begin with the realization, then, that timber sheds and oil patches can also be amenity sheds. Under current institutional arrangements, if a valuable strategic mineral deposit or oil reserve were discovered on wilderness lands, wilderness advocates gain

[33]The examples mentioned here are contrary to Krutilla's, in "Conservation Reconsidered," and to contemporary wilderness attitudes.

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nothing and could lose much if the area is subsequently developed. Under the proposed system, we assume that Congress has identified appropriate areas for wilderness and that most of them have their highest value as wilderness, and then we design a mechanism to deal with those situations where wilderness values compete with commodity values. The plan would deal with the problems of allocating competing values on existing wilderness lands as well as ameliorating the conflicts that result when the lands are nominated for inclusion in the wilderness system.

Decision makers in mining and energy companies recognize that development in these areas, even if possible, would be expensive in terms of time and other resources. Wilderness advocates, however, are likely to be quite reasonable if they have the opportunity to advance their interests by cooperating with development companies.[34] Under these circumstances the firms would probably find it easier to deal with a wilderness endowment board than with a federal agency. Thus, we would expect developer opposition to wilderness classification to be reduced. From the developers' perspective, the opportunity costs of holding lands in wilderness would become trivial. While we might want to require congressional approval for major developments in the wilderness endowment areas, even this seems unlikely to cause problems. At minimum, we would confront the prospect of watching environmental groups lobby *for* development on small portions of wilderness land.

Conclusion

Decisions are made on the basis of information and incentives. Under current institutional arrangements, wilderness advocates have little if any incentive to consider the preferences of others. By changing the incentives we can predict what behavior will follow. The institutional reform suggested in this paper promises substantial advantages in terms of economic efficiency, environmental quality, and equity. Few will deny that if there is a serious natural resource crunch in energy or strategic minerals, wilderness lands will be developed. If there is development, how can it best be managed? The administration's Asset Management Program is an important first step—but only that. It is time to move toward increased American productivity and decreased conflict over resource development. If these goals are to be realized, it is necessary to build a coalition of fiscal conservatives and conservationists. Perhaps the establishment of Wilderness Endowment Areas would move us in that direction.

[34]John Baden an Richard Stroup, "Saving the Wilderness: A Radical Proposal," *Reason*, July 1981, pp. 28–36.

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THE SUBURBAN SQUEEZE: LAND-USE POLICIES IN THE SAN FRANCISCO BAY AREA

David E. Dowall

A Suburban Land Squeeze Is Gripping the Region

A suburban land squeeze has hit the nine-county San Francisco Bay Area. Extensive post-war land development, increasing use of growth-management controls, more restrictive land-use and environmental regulations, and a "go-slow" development posture created by the passage of Propositions 4 and 13 have combined to reduce land conversion opportunities in the region considerably. Although the region contains an enormous supply of vacant land, because of its rugged topography or sensitive environmental character much of it cannot be developed. Other vacant lands that could be developed are restricted from use by local land-use controls. In 1975, the Association of Bay Area Governments (ABAG) conducted a detailed inventory of land use and the availability and potential use of vacant lands. The inventory recorded that of the region's 4.5 million acres, only 350,000 acres were vacant and "developable."[1] (Figure 1 delineates the Bay Area and shows the location of principal cities.)

Local Policies Are the Culprit

The suburban land squeeze is not the exclusive result of immutable natural constraints. It is the outcome of the restrictive land use and development regulations imposed by many of the region's 100 local governments. Controls over the potential use of land have placed severe limits on where, when, and how the region can develop. For

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[1]*Summary Report, Provisional Series 3 Projections* (Berkeley: Association of Bay Area Governments, March 2, 1977).

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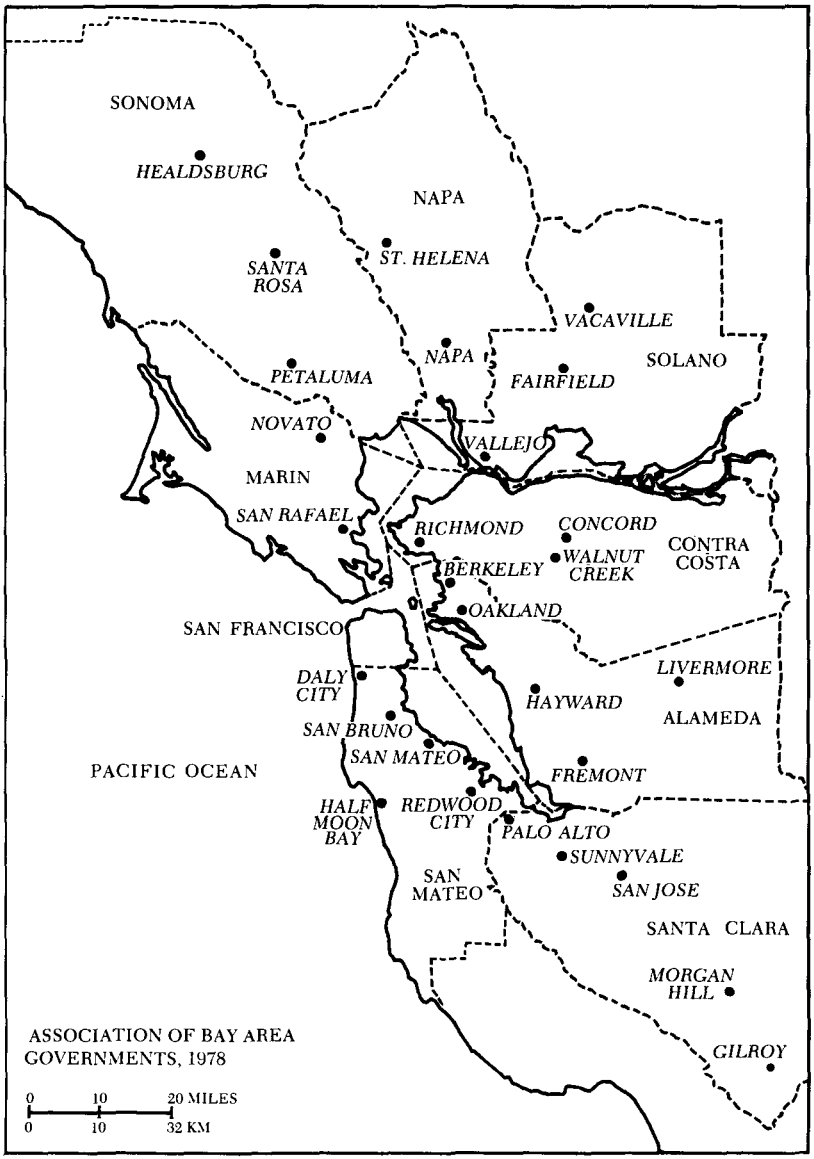
FIGURE 1
SAN FRANCISCO BAY REGION



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example, over 15 percent of the region's total land supply is in permanent open space controlled by local governments, the East Bay Regional Park District, and Federal National Recreation areas. For years, development has followed transportation corridors and filled valleys that lay outside the control of open space and park administration. During the early post-war years, there was ample room for suburban land conversion, and few attempts were made to stop development. Today, land conversion in suburban areas is not so easy. Most of the easily developable land has been urbanized, and a new mood has emerged in the suburbs. Continued suburban land conversion is now viewed as undesirable, and efforts to limit residential development are well organized and increasingly effective. Fiscal pressures are mounting, and most communities view additional residential development with great skepticism. The increased awareness of the environmental impacts of land conversion, fiscal pressures, and the dwindling physical supply of easy-to-develop land has radically altered the climate of suburban land conversion in the San Francisco Bay Region. The particular trends evident in local Bay Area communities are very alarming.

Residential Densities are Falling. If future development were to occur at current density levels, and if land use policies effected in 1975 remain unchanged, the region could accommodate a population of over 9 million. In reality, however, development densities for new residential construction are substantially lower than historical density levels, and recent evidence suggests that they will continue to decline. In 1975, given the existing local development policies, the Association of Bay Area Governments (ABAG) estimated that the supply of land available for residential development would not be sufficient to meet projected housing demand beyond 1990.[2] In other words, the supply of developable land in 1975 could not accommodate a projected 1990 regional population of just under 6 million.

The Rise of Local Growth Controls. The pro-growth attitude prevailing in most Bay Area communities in past decades has been replaced by a slow-growth posture, brought on by rising governmental fiscal concern over Proposition 13. Cities that once relished being regional growth centers now view growth with much skepticism. With the new fiscal calculus of Proposition 13, single-family development usually generates higher costs than revenues in the public

[2]Stan Hoffman and Rune Carlson, "The *'Compact Growth'* Projection Alternative for the Air Quality Maintenance Plan," PTEC Working Paper, (Berkeley: ABAG, July 19, 1977).

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sector. This fact, in conjunction with a greater recognition of the environmental impacts of development, has inclined many communities to slow residential development.

Infill Development Is Not a Panacea. While many planners tout the ability of so-called infill development in urbanized areas to accommodate housing projects, the strident opposition of neighborhood groups to any use of vacant urban land makes developing such parcels difficult if not impossible. Besides neighborhood opposition, a national study of infill potential found that vacant urban parcels were often too small and too expensive for housing development.[3] Also, parcels were frequently withheld from the market by owners unwilling to sell them.

Jobs, But No Housing. With Proposition 13, most communities have altered their approach to land-use planning and zoning. Caught in a fiscal squeeze, many towns have stepped up efforts to increase their tax base by attracting more commercial, office, and light industrial development. While attempting to attract economic development, most communities have not concomitantly adjusted their zoning to provide housing for additional employees. Consequently, new employees, particularly those migrating to the region, find it extremely difficult to acquire affordable housing. In terms of land availability, the ratio of residentially developable land to employment-generating land is out of balance. More land needs to be placed in residentially developable zones and less in commercial, office, and light-industrial use.

Looking Out for Number One: Cities Against Cities and Counties. While local governments in the Bay Area have always pursued their own interests, recently intergovernmental competition and cutthroat behavior have escalated to alarming proportions. Competition is no longer a tug-of-war between cities to see who can attract the most development. The game is now more of a pushing match to see who can push the most fiscally and environmentally costly growth off onto other communities. These community pushing matches have enormous implications for the long-term development of the region, and are becoming very serious as more communities join in. In the past, as long as the number of communities attempting to push growth off onto their neighbors was small, the regional impact of such policies

[3]*Urban Infill: Its Potential as a Development Strategy* (Chicago: Real Estate Research Corporation, October, 1981.)

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was minimal, since other towns could absorb the growth without much difficulty. With most towns trying to export undesirable growth, fewer communities remain that are willing to pick up this pushed-off growth.

The Adversity of Supply Restrictions

If the current local land-use and development control policies remain unchanged, their inflationary impact on land and housing costs will ultimately slow the region's rate of economic growth and eventually affect its economic structure. Higher land costs will directly translate into higher rents and building costs. Higher land and housing costs will force up wage rates, as workers are forced to pay higher housing costs. These higher wage and building costs will reduce the Bay Area's attractiveness to business and industry. As costs of housing and office and industrial space escalate, firms that are not able to meet these rising costs will move elsewhere. Firms such as Del Monte and Blue Cross/Blue Shield have recently left the region. These relocations cause hardship for employees: forced relocation or job loss. In Silicon Valley there is much concern over the increasing tendency of high-technology firms to develop production facilities outside the Bay Area. If a significant number of firms leave the region, finding substitute jobs may become more difficult—particularly if the job losses are concentrated in the clerical and blue-collar areas. The distribution of jobs in the region could conceivably shift from a more balanced mixture of professional, blue-collar, clerical, and service types to exclusively high-wage, high-productivity executive types. What has happened to San Francisco over the years may happen to the entire San Francisco Bay Area; that is, the whole region could become gentrified. Imagine the Bay Area as a homogeneous concentration of white collar professionals serviced by poorer workers who commute in from Stockton or Tracy.

With fewer job opportunities, due to a slower rate of economic growth, the region's younger population will have to seek work elsewhere. Perhaps this will be an analogous version of Italy; while southern Italian youth head to Milan and Turin and other points north to find work, San Franciscans will head south to Los Angeles, Orange County, and San Diego.

All workers will feel the effects. Unless they are willing to move elsewhere, the chances for job promotions, salary increases, and enhanced power and prestige will be limited if the region's economy slows down. In a steady-state economy, the size of a firm will remain constant; the chances of getting promoted depend on who retires, quits, or dies. (Unless, of course, you agree to move to a corporate

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division in, say, Omaha.) For better or worse, people have a solid stake in economic growth. While economic growth doesn't guarantee more employment opportunities for the unemployed and underemployed, the prospects for economic advancement in the steady-state economy are slim.

The Problems of Continued Urban Sprawl

All of these projected impacts of economic strangulation are possible, if we let cost pressures dictate the region's development. This is not to suggest, however, that the San Francisco Bay Area should continue to develop unchecked; the prospects of paving over the landscape are every bit as alarming as letting land inflation choke off growth.

Fears of turning the Bay Area into another Los Angeles have been voiced since the late 1950s. Many planners were afraid that the region would become completely urbanized. For example, two highly regarded demographers, Kingsley Davis and Eleanor Langlois, projected that the region's population would rise considerably between 1960 and 2000, that the population density would continue to fall, and that therefore the extent of urbanized land in the region would increase substantially.[4] The environmental impacts of such a scale of development are substantial:

> In 1920, when the urbanized area included only 157 square miles, it was not hard to get out of the city. When the sprawling metropolis of the year 2000 covers 7,663 square miles, the distance from the center to the periphery will be approximately fifty miles. Even after one has traversed the fifty miles, there will be no necessary release from urban congestion, for the traveler may simply find himself in the Sacramento or Stockton urban complex.[5]

However, ABAG estimates that by the year 2000, the region's population will be 6,205,018, and that its urbanized land area will reach only 1,069 square miles. The problem is no longer the paving over of the region; it is whether there is enough developable land to accommodate growth.

Pressing Regional Problems

Fears that the San Francisco Bay Area will become completely urbanized have been joined by more recent concerns that growing restrictions on land conversion and development by local jurisdictions are beginning to limit urban development in the nine-county

[4]Kingsley Davis and Eleanor Langlois, *Future Demographic Growth of the San Francisco Bay Area* (Berkeley: Institute of Governmental Studies, 1963).
[5]Ibid., pp. 26–27.

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region. The region's future urban development is being determined by the individual land-use policy decisions made by over 100 local governments. Over the years, the staunch independence of the region's local governments was regarded as desirable, guaranteeing diversity in living environments and public services. While efforts were made to make local governments more responsive to the needs of the region's low-income households, and State Assemblyman Knox introduced his bill to establish a regional government, the Bay Area has never seriously considered creating a regional government with broad controls over land use and development. In the past 10 years a number of subtle changes have cumulatively altered the climate for continued urban development on the suburban reaches of the Bay Area. These shifts have had the overall impact of constraining residential development. These constraints have created a variety of concerns:

1. The region's housing supply is being restricted, and it is not keeping pace with growing housing demand.

2. Housing and land prices are escalating sharply.

3. As workers scramble to find affordable housing, there is a growing imbalance between the location of jobs and housing.

4. The jobs/housing imbalance is crowding the region's transportation system. Freeways in the southern portion of the Bay Area are extremely congested as more people have to live in lower-cost housing areas in southern Santa Clara County and southwestern Alameda County and commute to jobs in northern Santa Clara County.

5. Because more communities are restricting residential development or reducing the permitted density of housing development, sprawl continues, leapfrogging out to more hospitable areas or consuming land at very low density.

A Survey of Local Planning Departments

In an effort to assess the regional implications of local land-use policies, the Institute has been surveying Bay Area planning departments since the spring of 1979. The results of the survey provide a useful picture of the current state of local land-use policies and allow us to develop several important conclusions about the regional impacts of restricted suburban development opportunities. The survey confirms that the future of land conversion in the Bay Area is not bright; opportunities for continued residential development appear to be limited; and there are already signs that a severe housing shortage

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is beginning to affect the continued expansion of the electronics industry in Santa Clara County.

This research shows that many cities that once were accused of land-grabbing have now curtailed land annexations. Wary of expanding city services to outlying unincorporated areas, cities are not courting annexation proposals. While some cities limit annexation to adjacent parcels, others simply refuse to annex unless forced to by the Local Agency Formation Commission (LAFCO). In most instances, no annexation means that development cannot occur. While it is possible to get county approval for development in unincorporated areas, counties are also facing fiscal constraints. In Alameda County, for example, a proposal was recently put before the Board of Supervisors to reduce rural development densities even further. The concern was that if the county allowed development to occur in clusters, the new residents would then band together and demand increased fire and police protection, both of which are costly.

Fiscal considerations also play an important role in shaping the development of incorporated areas. Many planners indicated great interest in the possible use of fiscal cost-revenue impact models for assessing the effects of proposed land development projects. These models are used to determine the tax and expenditure implications of proposals. Often their findings are used to keep out projects that would not be likely to generate a fiscal surplus.

This survey confirmed that continued development was a growing concern of citizens. Over one-third of the respondents, representating 34 communities, indicated growth as a major local issue. Of these 34 communities, nine had implemented growth-management ordinances, and seven others either had proposals pending adoption, or were considering them. While each ordinance is designed differently, the effect is the same: to restrict the pace and extent of development. Many of these programs, by the way they are administered, delay *all* development, in some cases up to a year. For instance, cities using a competitive allocation system accept proposals throughout the year, and then meet only once or twice per year to decide which projects can proceed.

The survey also documented the increasing use of development controls to protect environmentally sensitive areas. Nearly one-half of the region's cities have, or are currently developing, slope density ordinances to regulate hillside development. Using the slope grade as the determining factor, residential areas may be downzoned from minimum lot sizes, of 10,000 to 20,000 square feet, to 1–10 acre minimums. The increasing use of this technique suggests that devel-

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opment, having consumed much of the land on the valley floor, is now encroaching on the hillsides.

Downzoning is by no means limited to environmentally sensitive areas. Over one-third of the planning agencies indicated density and preservation of a community's single-family character as significant concerns. Citizen expectations, then, can have as great an impact on land use as the land's own inherent characteristics. One Bay Area developer designed a mixed project combining both high- and low-density residential units, but made the mistake of constructing the single-family units first. When he later tried to phase in the multi-family units, he met with considerable opposition from the newly settled residents in the single-family homes. Our research found these concerns about density increasingly evident as motivation for recent zoning changes. Approximately 39 communities have downzoned residential densities over a significant portion of the community, further reducing development potential in the region.

Another indication of the increasingly cautious approach to development is the use of moratoria to halt development, giving a city time to study its options. In recent years, over 45 communities have used this technique to defer development, while new plans or policies are devised to deal with problems generated by rapid growth, environmental impacts, or service-capacity constraints.

While these actions are understandable when viewed at the community level, we believe that the long-run economic and social well-being of the Bay Area depends largely on the availability of land suitable for residential, commercial, and industrial use. Communities are adopting policies that, while furthering their own short-run interests, are likely to have dire consequences for the region.

Why Local Land Use Policies Have Changed

How a community decides to control land use conversion and development depends on a variety of historical, cultural, political, fiscal, and environmental factors.

Critics of the go-slow mood are quick to suggest that the growth-limitation binge is the result of elitist newcomers trying desperately to preserve what they came to enjoy. It is sometimes referred to as the "gangplank syndrome," where newcomers try to stop others from moving in. Such a characterization is incorrect; it is overly simplistic, and it erroneously places too much emphasis on elitist citizen pressure. Other factors are at work, including intergovernmental finance, environmental degradation, and the general but hard-to-pin-down

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effect of what Toffler calls "future shock": the inability of people to cope with rapid social and cultural change.[6]

Until recently, many Bay Area communities have been the passive recipient of substantial residential and commercial development. Most towns accepted growth as inevitable, and a few actively pursued new development. To guide this development, towns and counties relied on zoning and general plan guidelines that were, at least in the beginning, very unsophisticated. Most community zoning ordinances, for example, failed to consider the environmental characteristics and development implications of the region's hillside areas. In fact, until the early 1960s, many communities' hillside areas were zoned at the same density as the flatlands.

Historical Growth Patterns

Prior to 1950, development was primarily concentrated in the central Bay Area. The two central cities of Oakland and San Francisco accounted for more than 50 percent of the total population in the nine-county region. To the north and south of San Francisco, and to the east of Oakland, agriculture was still the dominant land use in the 1940s.

During the early post-war years, the Bay Area began to change rapidly. The 1950 census revealed new patterns of development. Returning veterans took full advantage of Veterans' Administration home loans. The demand they created was accommodated by developers who availed themselves of the low-cost land on what was then the urban fringe. In 1950, for instance, nearly one-half of all new units in Alameda County were built in unincorporated areas. San Mateo County, once a haven for the wealthy, doubled its population in a decade; Santa Clara County experienced a two-thirds increase.

Between 1950 and 1960, the Bay Area population increased by nearly 1 million. Much of this growth was concentrated in southern Alameda, San Mateo, and Santa Clara Counties. South of Oakland, along the Bay, San Leandro and Hayward grew by 140 and 400 percent respectively. In San Mateo, along Route 101, five cities more than doubled their populations.

Land development in the decade preceding 1960 set the pattern for the years to come. Growth spread out along all major transportation corridors; small towns within commuting range of employment centers became major cities in a few short years. During the decade it was common for communities to boast about their growth rates,

[6]Alvin Toffler, *Future Shock* (New York: Random House, 1970).

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with several above 400 percent. Cities competed for both industrial and residential development.

During the 10-year period from 1960 to 1970, the Bay Area again grew by nearly 1 million. Few cities were untouched by the increase, and the '60s saw several notable new trends in development. Growth spread south in Alameda County into the Fremont/Newark/Union City area, and east along the Interstate 580 corridor into the Livermore Valley area. The widening of Highway 24 in Contra Costa County opened up thousands of acres to development. Cities along the freeway such as Lafayette, Pleasant Hill, and Walnut Creek experienced substantial gains in population.

Though industrial development was minimal to the north of San Francisco, towns along U.S. 101 gained significant commuter populations. While Sonoma and Napa Counties retained their agricultural character, the cities of Santa Rosa and Napa developed into regional centers of substantial size.

In the South Bay, development continued as it had in the preceding decade—at an extraordinary pace. Rapid growth in light industry provided exceptional employment opportunities. By 1980, Santa Clara County, with 25 percent of the region's population, surpassed Alameda and San Francisco to become the region's largest county.

By 1975, development had consumed nearly half of all the developable land in the Bay Area. Population, once concentrated in the central portion of the region, shifted south and east. Now, since many cities in the South and East Bay are solidly built up to their city limits, pressure to develop in the North Bay has increased dramatically. North Bay counties, traditionally agricultural, view this shift with mixed emotions.

The historical process of urbanization has had two fundamental effects on the posture of local communities towards land development. First, the historical pattern of centrifugal development introduced an entire new set of rural communities to growth pressures. Second, the impact of substantial post-war growth began to exert itself on communities, particularly traffic congestion, air pollution, and dwindling open space. Towns impacted by rapid urban development increased from a handful to several dozen. Peripheral development in the region exposed many more communities to planning issues, and as a consequence, led them to consider more sophisticated development regulations, and ultimately revamp their general plans and zoning ordinances.

Growth Pressures Created A New Mood

Over time, the rapid rate of land conversion in the region's rural areas began to attract considerable attention. The conversion of fruit

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orchards in Santa Clara County, and pressures on the vineyards of Napa and Sonoma Counties, focused attention on the adverse affects of urban development on the region's landscape. By the late 1960s the environmental movement had shifted into high gear. By 1972, environmental regulation in the Bay Area was well developed. In Sonoma County, the city of Petaluma adopted its controversial growth management plan, which limited the number of building permits that could be issued in any one year to 500; this gained widespread attention. Given its importance in shaping local land-use and environmental regulations in the region, the Petaluma case warrants closer study.

In the 1960s, the widening of U.S. Highway 101 clearly put the city of Petaluma within the sphere of San Francisco. City workers looking for inexpensive housing, large residential lots, and good schools were attracted to Petaluma. Residential construction boomed, and rapid growth greatly strained city services. The new development forced the city to provide substantial new services and expand existing facilities. Congestion developed on the city's streets, and long-time residents denounced new growth as having destroyed the small-town character of Petaluma. A report by the American Society of Planning Officials details the Petaluma plan:

> In response to these concerns, a series of goals were adopted. Growth was to be limited to approximately 500 new housing units annually from 1973–1977. The city's small-town character and surrounding open space were to be preserved by controlling the rate and distribution of growth. Development was tied to school and utility capacity and balanced between eastern and western sections. With the cooperation of Sonoma County, all urban and suburban development near the city would be approved by and acceptable for annexation to the city. A permanent greenbelt of open hills and marshland and open space for recreation would be provided. Environment design plans, planned community districts, and planned unit developments would be required to gain the best design possible. Multifamily units would be encouraged and a variety of densities and building types ensured. The central business district was to be rehabilitated as the principal commercial center of southern Sonoma County.[7]

This marks a radical departure from traditional community planning. In the United States, particularly during the post-war period, local planning can be best characterized by its attempt to accommodate new growth in an orderly fashion. Prior to Petaluma's growth management plan, most communities had not overtly attempted to

[7]*Urban Growth Management Systems*, P.A.S. Report Nos. 309 and 310 (Chicago: American Society of Planning Officials, no date).

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limit or restrain development. The widespread attention accorded the Petaluma plan has had substantial impacts on local planning. At annual meetings of the American Institute of Planners and American Society of Planning Officials, lively discussions of growth-management programs have been rituals. Many communities confronting similar growth pressures began to experiment with growth management. By the mid-70s, national surveys of planning activities began to reveal a growing trend towards the use of growth-management devices. In a survey by the International City Managers Association, over 220 cities and counties indicated that they were using planning controls to regulate the rate of urban development.[8] In California, the State Office of Planning and Research Annual Planning Agency Survey found that over 300 of the state's 445 local planning agencies were using growth management and more traditional techniques to control the rate of land development.[9] In the Bay Area alone, this 1975 survey identified nearly 50 communities that were attempting to control the pace of development. The effects of growth management on housing and land markets are just beginning to be felt as more and more towns adopt growth management programs.

The use of growth controls by California communities is likely to increase. Such controls allow the community to avoid increased fiscal costs, minimize the rate of land conversion, and preserve environmental and overall community quality. Also, the fiscal squeeze created by Proposition 13 has made communities exceedingly cautious about the benefits of new development. Because tax revenues from new development are limited to only one percent of the full market value, many projects will not generate enough tax revenues to support the public services they need. With less revenues generated by projects, the margin of error in deciding which projects to approve or deny is narrow. As a consequence, many communities are not approving fiscally questionable projects, while other towns with more sophisticated cost-revenue estimation models are using them to determine which projects will generate an excess of tax revenues. Proposition 13 is a strong justification for limiting urban development.

While the fiscal arguments for growth control have been mounting, concern for environmental and neighborhood quality has also been increasing. Rising incomes and increased leisure time have contributed to the greater demand for high levels of environmental quality.

[8]"Managing the Environment at the Local Level," *Urban Data Service Report 2/74*, International City Managers Association, 1974.

[9]Office of Planning and Research, *Local Government Planning Survey*, State of California, 1976.

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The increased sophistication of citizens about environmental issues and how development affects environmental quality has helped to expand the role of citizen involvement in local land-use and environmental decision making. Citizens no longer assume that the planners or elected officials know what is best and that they must passively accommodate new development.

As a result of this new style of local planning, cities are more aggressively seeking their own objectives and are placing less importance on regional development needs or the regional implications of their local actions. While it would be erroneous to suggest that communities have not always pursued their own self-interest, we believe that in recent years the nature and interaction of local development decisions have changed fundamentally. In the post-war period, communities either accepted development as inevitable or often sought it aggressively. Even when a large number of towns actively sought growth, the regional impacts of this growth-seeking competition were usually considered desirable. Communities are still interested in high-quality development; the proverbial dream industry of research and development is still much sought after, but they are also interested in exporting or blocking undesirable growth. Communities will accept new tax-revenue-generating R&D, but they will at the same time curtail housing production, even if the housing is targeted towards the R&D workers.

Efforts to block development, or to allow only the very best or most desirable types of development, are not new. Land use and zoning history chronicles numerous cases where local communities exerted considerable control over the type of residential development permitted within their borders. In fact, zoning in the United States is founded on the principle that it will be used to protect and preserve property values.[10] What is different today is not that towns try to skim off the best type of development and block the entry of less desirable or more commonplace development, but that the practice of limiting growth has become so widespread. The days of uncritical pro-growth boosterism are over.

As each community attempts carefully to control the rate and type of development, the problems of restricted growth at the regional level become much more pronounced. There is no indication that local governments will soon begin to incorporate regional needs into their decision making. The fragmented nature of local land use and environmental planning is well documented. For example, over 10

[10]Richard F. Babcock, *The Zoning Game*, (Madison: University of Wisconsin Press, 1966).

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years ago, the *California Law Review* published an article deriding the selfish and short-sighted nature of local government development policies.[11] Despite frequent attempts to pass legislation to alter the mercantilistic pattern of local governments, reform is no more likely now than it ever was.

The most recent discussion of the regional problems engendered by local actions is centered in Santa Clara County. Exacerbated by the rapid growth of the electronics industry in Silicon Valley, the county commissioned a task force to study the growing problem of limited housing. Northern Santa Clara County communities have aggressively sought new manufacturing firms and increased employment, but have almost universally limited the construction of housing to meet the needs of an expanded employment base. Despite the fact that a limited supply of housing has begun to drive up prices, and slow the rate of economic development in the county, no community appears willing to alter its land development policies to allow for an increase in the production of housing. The task force's report identified the need for more housing,[12] but only a few communities have attempted to deal with the problem.

The main center of concern is in the private sector. The Santa Clara County Manufacturing Group has been monitoring the trends, and has called for more residential construction. The Bay Area Council, the region's influential private-sector planning organization, has established a housing task force to study the area's housing markets and recommend strategies to increase the opportunities for residential development. Change is not likely to come from local planners or local elected officials. Both must continue to promote the interests of their constituents or face recall or firing. Even though they know that the region desperately needs additional housing, local officials are forced to deny building permits for residential projects when local sentiment against such development is vocalized at planning and city council hearings.

The basic contradiction between local and regional interests is painfully apparent in the housing arena. The problem is in fact an excellent example of the prisoner's dilemma. If one of the communities in Silicon Valley were to say, "All right, we recognize the dire regional consequences of restricted housing production, and we are prepared to provide more housing," the other cities in the area would

[11]Steven H. Goldfarb, "Parochialism on the Bay: An Analysis of Land-Use Planning in the San Francisco Bay Area," *California Law Review* 55 (1967): 836–55.

[12]See *Living Within Our Limits,* the report of the Santa Clara County Industry and Housing Management Task Force (San Jose: County of San Jose Environmental Management Agency, November 1979).

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be able to continue to cream off fiscally desirable economic development and export residential development to our noble but foolish community.

Examples of mercantilist action in Santa Clara County are abundant. The city of San Jose, the growth center of the county and the historical center of suburban residential development, has recently altered its policy on residential development. Citing fiscal pressures and the imbalance of predominant residential development resulting from its historical role as a residential suburb, the city has now taken steps to limit the location and type of residential development permitted and is attempting to attract more industrial and commercial development. This shift in land development policy has the net effect of moving San Jose from its original role as a provider of housing into a position of competing for economic development opportunities with other county communities. Another example is the City of Santa Clara. Its zoning and general plan greatly curtail the development of residential projects. Most of the vacant land in the city is zoned industrial, and the city has taken few steps to balance this economic development potential with the necessary level of housing to meet the needs of additional workers.

Needless to say, the regional implications of efforts such as these are adverse if enough communities follow suit, and recent survey results of local development policies clearly indicate that this is happening. Ultimately, if housing opportunities in the region are limited by attempts to maximize tax and economic benefits or to preserve environmental or neighborhood quality, the housing market will become extremely tight, and eventually high housing prices will exert severe economic pressures on all sectors of the region's economy.

The Regional Impacts of Local Land-Use Policies

While 20 years ago over 40 Bay Area towns provided ample land for development, new growth pressures are concentrated on 16 cities and the unincorporated areas of Contra Costa County. Between 1975 and 1979, these regional growth centers accounted for 67,000 housing starts, about 46 percent of the region's total production. As we have seen, this concentration of regional housing production is a reflection of the historical patterns of development and land conversion, and of the restrictive land-use policies of many other Bay Area communities. What are the implications of this concentrated pattern of land conversion on the region?

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The Geography of Regional Growth Has Shifted

Unless trends change, the principal area of growth will be in the northeast portion of the region. Seven of the 16 growth-center cities are located in northern Contra Costa and Solano Counties. These cities, along with the unincorporated portion of Contra Costa County, provided nearly 24,000 housing units between 1975 and 1979, accounting for 16 percent of total regional production. The availability of cheap, buildable land, together with limited restrictions on land development, has made this the prime area of large-scale residential development. While this area has not historically been the center of much employment development, demand for housing has been strong. Many first-time buyers are willing to commute long distances to work in order to buy affordable housing. This mismatch between the locations of affordable housing and employment is evident in the growing traffic congestion on Interstate Highways 80, 680 and 780. Over time, however, it is likely that jobs will follow housing into the northeast portion of the region.

The imbalance between job and housing location is also a major problem in the southern portion of the region. While substantial employment growth has occurred in southern San Mateo and northern Santa Clara Counties, little housing has been provided. Consequently, housing pressures are intense and many workers in the high-technology industry are forced to commute from the East Bay. Traffic levels on the San Mateo and Dumbarton Bridges have grown considerably in the past five years, and the housing markets in Fremont, Hayward, Castro Valley, and Livermore are affected. While people are willing to make long commutes, many high-technology firms say that they are beginning to have trouble attracting employees. The Santa Clara County Manufacturing Group, an organization of high-technology firms, has estimated that enough land is zoned to create nearly 250,000 jobs but only 80,000 housing units. The efforts to attract fiscally desirable, clean industry has led many Santa Clara County communities to provide large tracts of industrially zoned land and not much residentially zoned land. If only one or two of the cities did this, the housing impacts would not be great, but most of the larger cities in the county have adopted policies favoring industrial and commercial development over residential development. The Manufacturing Group has been pressuring local governments to alter their land-use and zoning to permit construction of housing in what is now industrially zoned land. Unless substantial changes occur in the local zoning ordinances of most cities in Santa Clara County, the growing imbalance between job and home location will persist.

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Without the renewal of residential development in such areas as the northern part of Santa Clara County, bayside San Mateo County, or southern Marin County, new residential development will continue in other parts of the Bay Area. The implications are that moderate-income home buyers will be forced to purchase houses in Solano and eastern Contra Costa Counties and in scattered cities in Alameda and coastal San Mateo Counties. The residential development of these outlying areas of the region will generate substantial urban sprawl, and will continue to fuel the process of economic decentralization away from San Francisco and Oakland. The rapid development of office buildings in Walnut Creek, Danville, San Ramón, and Dublin is indicative of this trend.

While the overall results of such decentralization are complex and not completely understood, the development of these outlying centers may have adverse consequences for the region's older centers. The office boom in Contra Costa County makes it very difficult for cities like Richmond, Berkeley, and Oakland to intercept decentralizing firms.

Local Growth Restrictions Have Affected Competition Among Builders

One clear result of the local planning survey is that land-use regulation has become much more complex in the past 10 years. Anyone attempting to develop land in the Bay Area must now go through many steps to obtain permission to develop. While the closer scrutiny provided by the more sophisticated regulations has protected the environment, it has also led to a lessening of competition among developers. The building industry is now much more concentrated than 10 years ago; today there are fewer builders, and those who are developing residential projects are larger and have a greater control over local markets.

Local land-use controls can restrict competition in the construction industry in several ways. First, zoning and open-space preservation limits the supply of land available for development which acts as a barrier to entry to new firms. Zoning makes it easier for one or two developers to tie up land. If only a few developers control all of the developable land in a local housing submarket, they can keep the price of new housing high, above the level that would normally occur if the local market was competitive.

Another way local land-use controls unwittingly confer monopoly power on developers is their extreme complexity, making developers reluctant to enter local markets. The costs and uncertainty of adjusting to new and unknown administrative programs is high. Devel-

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opers who have established good working relationships with planning staffs have a better chance of obtaining development approval. If developers can shepherd projects through complex administrative review systems, they can and will charge excess prices for the approved units. For example, a study of developments in San Jose found that after holding constant for increases in labor, materials, and land costs, and for increased public requirements and housing quality, between 1967 and 1976, the two developer projects analyzed increased their gross profits (in constant dollars) by between 158 and 231 percent.[13] The researchers concluded that these excess profits were partially the result of constrained housing supply and the exercise of monopoly power by the developers.

A third way that local government policies can restrict competition in land and development markets is through the increased financial requirements placed on developers to provide public infrastructure. With the passage of Proposition 13, communities are now hard-pressed to provide the infrastructure needed for new development. Consequently, localities now require developers to provide needed utility systems. While shifting the financial burdens to developers solves the immediate fiscal concerns of local government, it makes it very difficult for small developers to operate. As front-end costs increase, the small developer-builder finds his capital costs rising. If present trends continue, only the largest, well-capitalized firms will remain in the marketplace, and the concentration of economic power in the hands of a few large developers will continue.

With the present widespread use of restrictive land-use controls and the shifting of public-sector infrastructure costs onto developers, the reduced level of competition in the residential construction industry is likely to continue.[14] Limited competition and greater economic power will exacerbate housing price inflation in the Bay Area.

Regardless of whether suburbs are limiting residential development because of no suitable land, increased citizen opposition to new development, or fiscal pressures, the implications are the same: the region's housing supply will not expand to meet the demand projected for the 1980s. This housing squeeze will continue to drive up housing prices and place extreme hardship on young families. If housing price increases maintain a sustained upward climb, the vital-

[13]Gruen, Gruen and Associates, *Effects of Regulation on Housing Costs: The Case Studies* (Washington, D.C.: The Urban Land Institute, 1977.

[14]David E. Dowall, "The Effects of Tax and Expenditure Limitations on Local Land Use Policies," *Perspectives on Local Public Finance and Public Policy*, vol. 1, forthcoming.

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ity of the regional economy will be jeopardized. Fortunately, key regional and state groups now recognize the scope and magnitude of the problem and are beginning to develop programs to solve the region's housing problem.

Solving the Suburban Squeeze

The fundamental problem facing the San Francisco Bay Area, and many other high-demand metropolitan areas, is the low level of housing production.[15] Solving the problem will be difficult and politically contentious. It cannot be solved without the joint cooperation of local and state government, developers and businesses, and citizen groups.

Removing Fiscal Disincentives

The first change needed to produce more housing is to change the structure of intergovernmental fiscal relations so that housing is no longer perceived as a fiscal "albatross." This would require that state funds to local governments be partially geared to local housing construction. If the incentives were substantial, it is conceivable that much more housing could be produced.

Another possible way of eliminating the fiscal disincentives of housing production is for states to take over the financing of local infrastructure and selected services (such as education). Freeing local governments from having to provide these services would reduce the tendency of local governments to block new development. Or if the "top-down" approach to infrastructure finance is unacceptable, new quasi-public special districts could be created to finance services. New service districts in developing areas could float revenue bonds to finance infrastructure.

Funds to support residential development also could come from corporate and public pension funds. If the housing squeeze gets worse, some businesses, particularly those that are not footloose, may be willing to finance or partially underwrite infrastructure finance. A frequently mentioned technique for eliminating fiscal zoning is tax-base sharing. If a regional property tax sharing district were created, cities might be less inclined to develop industrial and commercial districts at the expense of housing.

If intergovernmental fiscal relations could be altered slightly, so

[15]While the San Francisco Bay Area has the most chronic case of restrictive land-use regulation, other metropolitan areas show signs of land constraints (Houston, Washington, D.C., Boston, New York). For a discussion of these areas see D. E. Dowall, *The Suburban Squeeze* (Berkeley: The University of California Press, forthcoming).

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that housing was not viewed as a fiscal drag, efforts to promote housing production would be greatly facilitated. However, changing the financial picture alone will not guarantee more housing; other changes are needed.

Promoting Higher Density and Mixed-Use Development

The density of residential development in many metropolitan areas continues to fall. Attitudes about high-density development are largely negative, and are reflected in the marketplace and at public hearings. A recent Bay Area Council public-opinion poll found substantial adverse sentiments about additional residential development generally, and high-density development in particular. Thirty-three percent of the respondents agreed with the statement that "new residential development in my community would threaten the quality of life of current residents." Fifty-four percent of the same respondents agreed that "high density housing means lower quality of life."[16] The negative response to high-density environments is based on many factors, but one reason people are against it is because they don't know what the benefits are, and they don't know of any good examples.

While somewhat less controversial, mixed-use development suffers from a similar negative image. Most cities refuse to permit housing in commercial and industrial areas. Much of the resistance to mixed-use development stems from neighborhood opposition, problems of security, and conflicts over circulation between different types of users.

If land is to be used more economically, communities must begin to permit higher density projects and allow housing in commercial and light industrial areas. An educational and technical assistance program could begin to reduce opposition to high-density and mixed-use development. Such a program should concentrate on planning commissioners, elected officials, planning staff, and neighborhood groups. The educational and advocacy effort could be mounted by state or regional governments, or by specially created private, nonprofit institutes. While it will be difficult to convince communities that higher density and mixed-use development is needed to provide housing and preserve environmental quality, it is fundamental for solving the suburban squeeze.

A Regional Housing Advocacy Group Needed

There are no well-organized groups to advocate increased housing production. Opposition to development comes from residents who

[16]*Bay Area Poll* (San Francisco: The Bay Area Council, 1980).

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have much to gain and little to loose by stopping development. At present, only the project developer stands as the primary advocate of housing development. Future homeowners, workers who cannot afford to live near where they work, and businesses that cannot find workers have no representatives at local planning or city council hearings.

A regional housing advocacy group to aggressively promote housing production in communities could be very effective. The advocacy group could operate on three distinct levels. It could act as a clearinghouse for information about how to increase housing production. It could distribute model ordinances and information on how to promote dense, compact development and on the advantages of higher density and mixed-use projects. On a second, more active level, the advocacy group could provide technical assistance to communities wanting to reduce development permit processing time, rezone industrial land, and allow mixed-use development. The advocacy group could also make presentations to elected officials, planning commissioners, planning staffs, and neighborhood groups to explain why more housing is needed, what the benefits are of higher density development, how it can be provided without disrupting the local environment, and what services the advocacy group could provide to communities.

The advocacy group also could operate as an aggressive force to press communities to increase housing production. The group could attend local planning commission hearings and seek approval of higher density projects. It could act as a housing proponent at project hearings and strive to offset local opposition to development. It could urge communities to fully implement recently adopted housing legislation (discussed below) and to take other steps such as rezoning industrial land to residential use and allowing construction of residential units in commercial areas. If these steps fail, the group could take legal action against cities that refuse to comply with state housing and planning law. Such a group could crystallize diffuse pro-housing interests among young, renting families unable to buy houses and counteract the overwhelming opposition to new development common at planning commission hearings. It could provide the base for developing a consistent housing production policy for the region and probably gain support from many groups that are not now actively engaged in housing advocacy.

Corporate Participation

Most corporations assume that communities have their interests at heart when making planning decisions. While in the past this might

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have been true, it may no longer be so. Local elected officials and planners are now greatly influenced by the views and political power of neighborhood groups. These well-organized groups have learned how to shape local land development policy and know how to block undesirable projects. If businesses want communities to help them to continue to grow, they must play a more active and aggressive role in local politics. While most companies, particularly large ones, are reluctant to be involved, they will find it more and more necessary. To help corporations effectively get their views across, a regional housing advocacy organization could help focus business housing concerns and promote their interests.

State Legislation: A California Example

In the 1980 legislative session a number of housing bills were signed into law. The most significant, AB 2853, requires that local governments consider regional housing needs when preparing the housing element of the general plan. Specifically, AB 2853:

- ensures that local governments recognize their responsibility to help meet state housing needs;
- ensures that local governments implement housing elements that move toward the attainment of state housing goals;
- requires that local housing determinations and actions are compatible with state housing goals and regional housing needs; and
- ensures that local governments cooperate with each other to meet regional housing needs.

The bill requires local governments to embrace the concept of regional "fair-share" housing needs. Under the new law, local governments must revise their housing plans to insure that they provide their fair share of housing. On paper the law is very promising; if it is fully implemented, more housing units are likely to be built in the region. But much money will be needed to implement AB 2853, and many communities are ideologically opposed to it as an unwarranted intrusion by the state into local affairs. Regional governments must determine what the region's housing needs are and what each community's fair share is.

A recent ABAG memo estimated that over the next 18 months, it would cost $348,000 for ABAG staff to prepare the necessary housing estimates. Unfortunately, the State Assembly did not provide funds to implement AB 2853. As the once massive state budget surplus runs out, funds to regional and local governments will be limited. The big question is: Will AB 2853 be implemented? And what will happen if it isn't?

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The bill can help to dramatically increase housing production in the Bay Area. Each local government must assess its housing needs and its regional share, state its community housing goals, and set forth a five-year program for meeting its housing needs and objectives. To meet the housing needs of all economic segments, the plan must determine how to administer land-use and development controls, provide regulatory concessions and incentives, and utilize appropriate federal and state financing and subsidy programs.

The progress of California communities toward meeting the requirements of AB 2853 should be closely followed. If communities fail to take appropriate action, a regional housing advocacy group could file law suits as necessary. Also, new follow-up legislation should be prepared to insure that the housing objectives of AB 2853 are being met. More stringent legislation should be prepared in the event that AB 2853 is not implemented.

Conclusion

Over the past 20 years the process of suburban land conversion has changed dramatically. In many areas the supply of land that is easy to develop has dwindled, and developers are trying to develop more sensitive and controversial parcels of land. Environmental concerns have given rise to more vigorous and complex assessments of development proposals, and citizens have become better organized and more strident in their demands for environmental quality. In California Proposition 13 has added another solid argument against new community development; and planners now routinely consider the fiscal impacts of new development before granting approval.

At the same time demographic, migratory, and employment trends point to continuing strong demand for housing in many metropolitan regions of the nation. These conflicting trends guarantee a continued escalation of housing prices and greater difficulty for young families buying their first homes. If high housing costs continue, businesses in many metropolitan areas will find it more difficult to remain competitive in national and international markets. Footloose firms unable to maintain competitiveness will migrate to low-cost areas; those that cannot will grow more slowly.

The most sensible approach is to recast our notions about what good land-use planning is. Development needs to occur at higher densities, and housing needs to be better integrated with commercial and industrial projects. Much of the future demand for housing could be met without the conversion of any unserviced, open lands, if the

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density of new residential development were increased and declining commercial and industrial areas recycled to residential use.

While planning is very capable of stopping the conversion of open lands, it has not been effective in encouraging development in desirable areas. Unless development and recycling can be facilitated in serviced areas, we are unlikely to solve our regional housing problem. This may be accomplished several ways: First, the fiscal disincentives of new residential development must be eliminated. Second, the ability of "torpedo groups" to stop reasonable housing projects must be curtailed through countervailing housing advocacy groups. Third, impediments to the conversion of older areas to high-density residential use, regardless of their earlier use, must be removed.

Finally, citizens must be shown by way of concrete examples that higher density development is attractive and desirable both personally and for the community. Bringing about these changes is going to be difficult, and presents a major challenge to land-use planners in the 1980s.

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"THE SUBURBAN SQUEEZE": A COMMENT

Robert W. Poole, Jr.

This paper does a good job of describing the ways in which governmental tax and land-use policies have led to a growing housing shortage in the San Francisco Bay Area (and in much of the rest of California). Unfortunately, some of the author's proposed remedies would, if implemented, impose important new costs whose impact the author neglects to consider. Alternative remedies ought to be considered.

Before addressing these issues, however, two additional points deserve comment. First of all, Dowall fails to point out an additional consequence of the restriction of housing supply and the resultant rise in housing prices. That consequence is a rapid growth in government intervention into the housing market, in an attempt to make the restricted supply of housing more "affordable."

Within the past three years many California cities—including San Francisco, Los Angeles, Berkeley, Santa Maria, and Beverly Hills—have enacted some form of rent control. Counties, too, have enacted rent controls, ranging from comprehensive (Los Angeles County) to mobile-home-parks-only (Santa Barbara County). A second type of intervention is the requirement that developers make available a fraction of the units in a development at below-market prices; this policy is known as "inclusionary zoning." Both of these policies serve to discourage investment in new housing, thereby further worsening the supply-demand imbalance. They also place the burden of subsidizing lower-priced housing on the shoulders of housing providers, rather than on the taxpayers generally.

Yet another consequence of supply-reduction policies is an increased demand for government-produced or government subsidized housing. State-required housing elements of city and county general plans

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set forth goals for providing housing "affordable" to various lower-income groups. In many cases, the only way such housing can be produced is by extensive government subsidy. Thus, local governments find themselves increasingly being drawn into the role of housing producers—a role in which they have no particular expertise.

A second point in Dowall's analysis deserves comment. At various places the paper criticizes the growth of outlying suburbs. Although decrying the transportation congestion caused by the development of housing in outlying suburbs, Dowall also decries what would seem to be a positive development: the development of increased employment opportunities *within* those suburbs, so that many of their residents could avoid the long commutes. This naturally occurring development would reduce both traffic congestion and air pollution in the entire region. By reducing the demand for commercial/industrial uses in the older urban centers, it would also tend to make some of the land in those centers more attractive for housing development—precisely the result Dowall wants to occur. So it is difficult to understand his characterization of this process as threatening "adverse consequences" for the older urban centers.

Of greatest concern are Dowall's proposed solutions to the "prisoner's dilemma" situation in which cities end up with insufficient housing by focusing their policies on commercial and industrial development. Dowall suggests as remedies such measures as state aid to cities in proportion to the extent of housing construction, state financing of infrastructure and selected services (such as education), tax base sharing on a regional basis, and new service districts in developing areas funded by revenue boards. All but the last of these policies would increase centralization of government and reduce government accountability and responsiveness to local citizens.

Dowall's concern is with the fiscal dilemma caused by Proposition 13. The limitation of property tax revenue to one percent of market value frequently results in new residential construction costing more in terms of the public services it requires than the property tax revenue it generates under the one percent limit. (Commercial and industrial property generally requires less services and generates greater revenues and is consequently preferred.)

An alternative approach is to rethink the way in which public services are financed, reducing or eliminating property tax funding in favor of user fees.[1] Many California cities and counties have increased their reliance on user fees since enactment of Proposition 13 in 1978.

[1]See Robert W. Poole, Jr., *Cutting Back City Hall* (New York: Universe Books, 1980).

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Park and recreation services and garbage collection are often provided on a fee basis. Water and sewer systems generally charge fees, but often receive a significant amount of their revenue from property taxes. All of these services could be funded entirely from user fees.

But many other services can be shifted at least partly to user fees. Fire protection fees, based on the calculated "fire flow" required by each property (approximately proportional to the fire risk it presents), have been developed in Inglewood and several other California cities. (Such fees provide a direct incentive for the property owner to invest in fire prevention—sprinklers, alarms, fire doors, etc.—because such investments reduce the calculated fire flow and hence the size of the fee.) Private police patrol firms charge fees proportional to the extent and nature of their patrol activities; analogous public-sector fees are certainly conceivable. Many paramedic firms charge fees, rather than being funded by tax money.

With the majority of local public services financed by means of user fees, the fiscal dilemma caused by Proposition 13 becomes a non-issue. Public services become self-financing, whether the users are residential, commercial, or industrial properties. Moreover, when users pay directly for public services, they pay them wherever they use them, regardless of where they happen to live. Thus, the commuters who currently live in low-tax suburbs but enjoy the benefits of the nearby big city would have to start paying directly to enjoy those benefits which are provided in the form of public services.

Dowall also suggests that housing advocacy groups be created to publicize and lobby for supply-increasing policies. Such measures as one-stop permit processing and higher residential densities can, indeed, lead to reductions in housing costs, as HUD studies have shown. Other desirable supply-side measures include removing controls on the use of mobile and manufactured housing and ending restrictions on the conversion of apartments to condominiums; condos generally offer lower-cost home ownership opportunities than single-family housing.

Dowall also argues that cities should amend their zoning laws to "permit" housing to be built on what is now industrially zoned land. But in another place he suggests *rezoning* industrial land to residential. There is an important difference between allowing a type of use and mandating that use. In particular, such rezoning as Dowall suggests would constitute "downzoning," reducing not just the types of allowable uses but the market value of the land itself. While legal opinion is still mixed on whether such downzoning constitutes a "taking" requiring compensation under the Fourth Amendment, such further encroachments on private property rights can only discourage

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investors and developers from doing business in those communities taking such steps.

Finally, Dowall places great stock in the idea of state legislation to promote housing production. Unfortunately, his California example—AB2853—appears to be doing very little toward that end. Despite the frequent repetition of words like "ensure" and "require," the bill does nothing of the sort. In practice, what seems to be happening is that local planning departments are using AB2853 as a charter for expanded government intervention into local housing markets—more public housing, inclusionary zoning, increased land-use control. State legislation *could* be helpful, but it would have to provide explicitly for *deregulating* housing production, rather than further increasing the intervention and regulation which have led to the housing shortage in the first place.

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AGRICULTURAL LAND PROTECTION: IS GOVERNMENT INTERVENTION WARRANTED?

E.C. Pasour, Jr.

> As this century nears its end, as demands for food and competition for land accelerate, the most important question to face our nation may well be: How can we direct urban development to less productive acres, and thereby protect our irreplaceable prime farm land acres from further encroachment?[1]

The National Agricultural Lands Study (NALS) is just one among many recent works expressing concern about the loss of prime agricultural land. Recent studies by the Council on Agricultural Science and Technology (CAST) show that land markets are not working properly and that the conversion of cropland to nonagricultural uses poses a major threat to future agricultural production.[2] During the past decade, an increasing number of individuals and organizations have suggested that land resources are too important to be left to the "whims of market forces." According to this view, there should be a shift from private ownership to social or political control of land use. Gordon Bjork, for example, suggests in his 1980 book, *Life, Liberty, and Property,* that planning policies should be instituted at the federal level to estimate the derived demand for agricultural land for 25 to 50 years into the future, with steps taken to ensure its availability. A similar conclusion was reached in the NALS.

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[1]National Agricultural Lands Study (NALS), *Where Have the Farmlands Gone?* (Washington, D.C.: Government Printing Office, 1979), p. 2.

[2]Council for Agricultural Science and Technology (CAST), *Preserving Agricultural Land: Issues and Policy Alternatives,* Report no. 90 (Ames, Iowa: CAST, 1981); CAST, *Soil Erosion: Its Agricultural, Environmental, and Socioeconomic Implications,* Report no. 92 (Ames, Iowa: CAST, 1982).

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It is the thesis of this paper that the adoption of nonmarket measures to restrict the conversion of agricultural land to urban uses is likely to be counterproductive. There is a great deal of confusion both about the nature of the alleged problems and about the effects of the remedies proposed to deal with them. Specifically, the objectives of this paper are: to discuss the rationale for protecting agricultural land; to discuss the nature and effects of various programs proposed to protect agricultural land; to stress the inherent information and incentive problems in implementing all nonmarket land-use controls; and to show that the market is unique in its ability to allocate land to agricultural and other uses in a way that conforms most closely to present and future demands for land services.

A brief discussion of commonly cited reasons for protecting agricultural land will be followed by an analysis of market failure as a basis for government intervention in land markets. Various land-use control programs will be briefly described and analyzed in terms of their effectiveness in protecting agricultural land and the extent to which the programs are likely to increase the efficiency of land use. The paper concludes that increasing the role of government in land-use planning is likely to exacerbate rather than reduce land-use conflicts.

Rationale for Protecting Agricultural Lands

Several reasons are cited for protecting agricultural lands.[3] First, it is held that agricultural land must be protected to ensure production of sufficient food and fiber to meet the requirements of a growing national and world population. In some cases, it is argued, land should be protected to ensure the continuation of agricultural production in particular geographical regions. In this view, even if agricultural land is not required today, it *will* be required tomorrow.[4] Thus, we should maintain the option of using the land in agriculture at a later time.

Second, there are beneficial spillover effects (environmental amenities) associated with open space. And it is held that unfettered

[3]B. Delworth Gardner, "Allocating Agricultural Land via the Market versus Prime Land Zoning," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981.

[4]See William Fischel, "Urban Development and Agricultural Land Markets: Why We Are Not Running Out of Farmland," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981, p. 3.

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land markets will not retain enough land in agriculture and other open space uses.[5]

Third, protecting agricultural land is deemed necessary to ensure more orderly urban development. Agricultural zoning is suggested as one way to increase land-use efficiency by protecting farming operations against nuisance suits and piecemeal residential development.[6]

Finally, protecting agricultural land is justified on the basis of the local economic benefits that derive from a viable agricultural industry. In analyzing the benefits of land-use planning in Wilson County, North Carolina, for example, a recent study concludes: "The importance of agriculture and agribusiness to the economy of an area is one of the major issues in land-use planning for rural areas."[7]

Arguments that agricultural land should be protected beyond the level dictated by market forces are often considered with reference to prime agricultural land; that is, land that is now highly productive of crops. Prime agricultural land, however, cannot be identified solely on the basis of physical conditions; other factors, including incidence of disease and proximity to markets or to processing facilities, must also be considered.[8]

What is happening to agricultural land? Controversy surrounds both the facts and their implications. The NALS concluded that in recent years, three million acres of agricultural land in the United States were converted annually to other uses.[9] Such data on the overall agricultural land base, including pastureland, rangeland, and forestland, however, tell virtually nothing about losses of cropland.[10] Luttrell demonstrates that the amount of cropland varies over time according to the relative demand for farm products. Moreover, contrary to the tone of the NALS, acreage of cropland harvested in the

[5]J.C. Hite and B.L. Dillman, "Protection of Agricultural Land: An Institutionalist Perspective," *Southern Journal of Agricultural Economics* 13 (1981): 43–53.

[6]Robert H. Nelson, "Agricultural Zoning: A Study in the Purposes, Consequences, and Alternatives to Zoning," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981.

[7]Paul S. Stone and Leon E. Danielson, *Land Use and Development in Rural Wilson County*, Center for Rural Resource Development Report no. 1 (Raleigh: North Carolina Agricultural Extension Service, 1976), p. v.

[8]Gardner.

[9]National Agricultural Lands Study (NALS), *Final Report* (Washington, D.C.: Government Printing Office, 1981), p. 82.

[10]The accuracy of the three million figure—three times the historical rate—has been seriously challenged by Simon and others. See Julian L. Simon, "Are We Losing Our Farmland?" *The Public Interest* 67 (1982): 49–62.

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United States *increased* dramatically from 1970 to 1980 in response to product price increases.[11] There is little, if any, basis for fearing that a general decline in U.S. farmland will cause a crisis in food production.

A significant reduction in cropland and other farmland often does occur at the county level in rapidly urbanizing areas. Even for geographical areas where the magnitude of the conversion of land is not in question, however, projections of current trends are likely to lead to wrong conclusions. As Mark Twain demonstrated in analyzing the fact that in the space of 176 years the lower Mississippi shortened itself 242 miles, or about one half mile per year, "any person can see that in 742 years from now the lower Mississippi will be only a mile and ¾ long and Cairo and New Orleans will have joined their streets together. . . . There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact."[12]

The important question with regard to soil losses or conversion of land to other uses concerns the significance of the data rather than the trends. There *are* geographical areas in which cropland and other farmland are being rapidly converted to nonfarm uses. Under what conditions is governmental intervention warranted? The NALS and CAST studies imply that the market process does not efficiently protect land resources. The key issue is not how many tons of soil are lost or whether one million or three million acres of agricultural land are being converted to urban uses each year. The basic issue concerns the relative merits of market versus nonmarket approaches in protecting soil quality and in achieving an efficient allocation of land resources for agricultural and other uses.

[11]Clifton B. Luttrell, "Our 'Shrinking' Farmland: Potential Crisis?", paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, December 2–6, 1981, p. 12.

[12]Mark Twain, *The Family Mark Twain* (New York: Harper and Brothers, 1935), p. 87. Trend projections also lead to erroneous implications in the case of erosion. The recent CAST analysis of soil erosion states that the average annual loss of U.S. cropland by erosion is about five tons per acre. (See CAST, *Soil Erosion*, p. 14.) In and of itself, this fact does not warrant the conclusion that there is an erosion problem. (See CAST, *Preserving Agricultural Land.*) In fact, an analysis of national soil erosion surveys in 1934 and 1977 provides no support for the dire pronouncements that soil erosion has gone from bad to worse. In comparing these survey results, Mayer concludes that the nation's soil resources have vastly improved over the past half century. See T.W. Schultz, "The Dynamics of Soil Erosion in the United States: A Critical View," paper for a conference on "Soil Conservation," Agricultural Council of America, Washington, D.C., March 17, 1982; and Leo V. Mayer, "Farm Exports and Soil Conservation," *Food Policy and Farm Programs*, ed. by Don F. Hadwiger and Ross B. Talbot, *Proceedings of the Academy of Political Science* 34 (1982): 99–111.

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Market Failure

The traditional view of welfare economics is that the land market is efficient if perfect competition prevails. Market failure in land (and other) markets is said to occur to the extent that markets do not conform to the norm of perfect competition. Perfect competition requires price-taking behavior and perfect markets, which means perfect communication, instantaneous equilibrium, and costless transactions.[13] Since these conditions are *never* attainable, the market failure result is inevitable when real-world land markets are compared with the perfect competition norm. Let us consider some alleged cases of market failure in land markets.

Monopoly and Speculation

Market failure stemming from imperfect competition is inevitable when a downward sloping demand curve is identified with monopoly and taken to be *prima facie* evidence of resource misallocation. There are at least two problems in branding all sellers who face less than perfectly elastic demand curves as socially harmful monopolists: First, many sellers clearly operating under competitive conditions, including the 10-year-old operator of a lemonade stand, will be classified as monopolists. Second, the welfare consequences of short-run entrepreneurial profits cannot be appraised strictly in terms of the immediate allocation of resources.[14] A producer facing competitive conditions in the longer run may be able to achieve above normal returns in the short run through early entrepreneurial alertness. A theory and a social policy that hold and act as though these short-run gains are unearned monopoly rents will inevitably discourage entrepreneurial alertness in the future.[15]

Speculation in land markets is often considered socially wasteful, even by people who appreciate the merits of speculation in other areas. The argument is made that while investments in steel mills,

[13]Jack Hirshleifer, *Price Theory and Applications,* 2d ed. (Englewood Cliffs, N.J.: Prentice Hall, 1980), p. 234.

[14]Israel M. Kirzner, *Competition and Entrepreneurship* (Chicago: University of Chicago Press, 1972).

[15]The erroneous labeling of entrepreneurial returns as unearned rents is a direct result of the use of long-run equilibrium theory in measuring the welfare cost of monopoly. The equilibrium model misinterprets and ignores the function of profits and losses in the real world market process. Entrepreneurial profits are taken to represent social waste, since there is no role for entrepreneurship in long-run equilibrium. In real world markets, however, where decisions of market participants never perfectly dovetail, there is always scope and need for entrepreneurial activity. See S.C. Littlechild, "Misleading Calculations of the Social Costs of Monopoly Power," *The Economic Journal* 91 (1981): 348–63.

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grocery stores, and oil wells are necessary if their services are to be made available, land will be there whether anyone owns it or not. Accordingly, a recent economic analysis of land markets holds that "any long run investment in land is sterile from a social perspective, and any positive profits obtained from long-run land ownership are excessive, unnecessary costs to society."[16]

This criticism of speculators is rooted in the model of perfect competition where there is perfect knowledge and, consequently, no scope for entrepreneurship or speculation.[17] Real-world decision makers, however, are always faced with uncertainty and imperfect knowledge; in reality, all economic activity outside the stationary state involves speculation.[18] Thus, speculation in the competitive market process involves the discovery of information that is merely assumed in the perfect competition model.[19] When the uncertainty and imperfect knowledge of land markets are taken into account, the role of land speculators is no less beneficial (or different from) that of speculators in other markets.

Externalities

Spillover problems, like monopoly problems, appear to be pervasive when land markets are measured against the optimality conditions of the competitive norm.[20] A spillover occurs when an action by one person infringes on the property rights of another. The mere presence of a spillover effect, however, does not imply that there is a spillover problem. In order for a problem to exist, there must be incomplete compensation and the benefits of internalization must exceed the costs.

[16]James C. Hite, *Room and Situation: The Political Economy of Land-Use Policy* (Chicago: Nelson-Hall, 1979), p. 73.

[17]Notice how uncertainty, information problems, and transaction costs are implicitly assumed away in the following description of land speculation: "The new speculation on the urban fringe is generally associated with much wasteful land use. . . . Speculators purchase land from farmers, but having neither the interest in nor aptitude for farming, the speculators are apt to allow the land to lie fallow. In some cases, the land may be leased to farmers for agricultural use, but such leases may prevent speculators from selling out at a lucrative price in the middle of the growing season. Hence, the relatively small amount of income to be obtained from such a lease may not be sufficient to warrant foregoing opportunities for resale. . . The speculator, more often than not, is content merely to let the land ripen, i.e., let its price increase, without trying to use the land during the interim. . . ." See ibid., pp. 63–64.

[18]Ludwig von Mises, *Socialism* (London: Jonathan Cape, 1951).

[19]Dominick Armentano, *Antitrust and Monopoly: Anatomy of a Policy Failure* (New York: John Wiley, 1982).

[20]See John Burton, "Externalities, Property Rights and Public Policy: Private Property Rights or the Spoilation of Nature," in N.S. Cheung, ed., *The Myth of Social Cost*, Hobart Paper 82 (London: The Institute of Economic Affairs, 1978), p. 74.

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Externalities will remain if there are transaction costs; if there are no costs associated with negotiating, concluding, and enforcing contracts, all spillovers will be internalized to the extent that the benefits exceed the costs. If the cost of internalizing a side-effect exceeds the benefits, the spillovers may be said to be optimal. Thus, once transaction costs are included in the constraints on individual and governmental behavior, it cannot be shown analytically that any particular spillover represents a deviation from an attainable optimum.[21] That is, once the constraints in the form of technology, tastes, information, transaction cost, and so forth have been specified, the logic of the framework must lead to an optimal outcome.[22] Specifically, if the constraints are descriptive of real world conditions in the case of a particular land market, it cannot be demonstrated that the existing pattern of land use is nonoptimal given *those constraints.*

In the traditional Pigouvian approach to welfare economics, a difference between private and social cost is simply postulated. It is not shown that another method can decrease the costs of internalizing spillover effects when contrasted with contracting through market exchange. It is merely asserted that people do not take into account the total effect of their actions.[23] If costs cannot be reduced by governmental intervention or some other arrangement, there is no basis for contending that social cost exceeds private cost.[24] In summary, when one takes into account transaction costs and the information and incentive effects that are inherent in all nonmarket allocation procedures, it cannot be demonstrated empirically that externalities associated with land use are "inefficient," i.e., constitute a deviation from an *attainable* optimum. Indeed, at the attainable optimum, any attempt to further reduce negative externalities will be inefficient; the marginal value of the resources used to further reduce external costs will be more highly valued elsewhere by consumers.

Uncertainty and Option Value

Because of major uncertainties about future conversion of farmland to nonfarm uses, possible long-run climate changes, future trends in agricultural productivity, and future water and energy supplies and

[21]Carl J. Dahlman, "The Problem of Externality," *Journal of Law and Economics* 22 (1979): 154.

[22]See ibid., p. 153.

[23]Ibid., p. 154.

[24]Aside from this problem with the Pigouvian approach, opportunity cost (the value of the best sacrificed alternative) is inherently subjective and cannot be measured by outside observers. See E.C. Pasour Jr., "The Economics of Natural Resources: An Austrian Perspective," paper presented at a conference on "The New Resource Economics," Political Economy Research Center, Bozeman, Montana, June 10–13, 1982.

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costs, it is alleged that "preserving farmland for the future is like buying an insurance policy to provide for future contingencies."[25] This idea is closely related to the concept of option demand, which concerns the willingness to pay for retaining the option to use a resource that would be difficult or impossible to replace and for which no close substitute is available.[26] The option demand concept in the context of this paper implies that the appropriate social rate of time preference to be used in determining the present value of farmland is lower than the market interest rate.[27] The same problems arise in identifying examples of option demand, however, as for all other externalities associated with land use. A difference between the market interest rate and the social rate of time preference is *merely asserted*, but it is not shown that such a difference exists.[28] Moreover, when information, incentives, and transaction costs are taken into account, it *cannot be shown* that the social rate of discount for agricultural land is lower than the market rate.

The idea that farmland should be preserved through nonmarket means because of uncertainty ignores the advantage of decentralized markets in dealing with uncertainty. Uncertainty and constantly changing conditions pose problems for central direction, since no way has been found to coordinate and transmit information as fully as is done through market prices. In addition to information problems, there are incentive problems, which inevitably affect the implementation of all nonmarket land-use controls. Before discussing implementation problems inherent in all nonmarket land-use controls, several programs proposed to protect agricultural land use will be described.

Land-Use Controls

During the past decade, a number of measures have been proposed or instituted to affect agricultural land-use patterns. The programs may be classified as either voluntary, operating through economic incentives, or involuntary, involving regulation. Several incentive programs have been designed, at least in part, to protect agricultural land. Some 45 states have now enacted agricultural use-value taxation for farm and forest lands, legislation that permits qualifying agricul-

[25]CAST, *Preserving Agricultural Land*, p. 1.

[26]V. Kerry Smith, "Option Value: A Conceptual Overview," mimeograph (Chapel Hill: University of North Carolina, 1982).

[27]Colin Price, "To the Future: With Indifference or Concern? The Social Discount Rate and Its Implications in Land Use," *Journal of Agricultural Economics* 24 (1973): 396–97.

[28]See Pierre Crosson, "A Shortage of Agricultural Land," RFF *Resources*, 1982, p. 9.

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tural and forestry lands to be assessed for property tax purposes on the basis of present use value instead of market value. The implementation of use-value legislation faces theoretical as well as practical problems.

Market-value and income approaches are used in implementing use-value legislation. In the market-value approach, data on recent sales of agricultural land, with little urban influence, in the same county are used to estimate use value. In counties with large urban centers, there is likely to be *no* agricultural land where price is not affected by urban influences. In cases where market values of all land are influenced by nonagricultural factors, sales data are not useful in determining agricultural use values. An alternative is to use the income approach, which requires estimates of net income per acre over time and the capitalization rate. Since there is a great deal of subjectivity in estimating future income and in selecting the capitalization rate, use values will be differently estimated by different people. Consequently, there is no way to avoid a high degree of subjectivity in making use-value estimates, since expectations about future income and discount rates will vary.[29]

Fee simple purchase, including public land banking, is also proposed as a way to protect agricultural land. In this approach, local and state governments might purchase lands either to provide environmental amenities associated with open space or to keep land in food production.[30] Land banking is not usually proposed as a way to protect land but rather to restrain land price increases through the "elimination of speculative profits."[31] There is no way to avoid speculation in a world of uncertainty; and when incentive and information problems associated with governmental activity are taken into account, public land banking is more likely to *increase* land prices.[32]

Instead of purchasing agricultural land in fee simple, the farmer might retain title to the land while local and state governments purchase only the rights to develop land for nonfarm purposes.[33] If

[29]E.C. Pasour, Jr., "Estimating Agricultural Use Values in New York State: Comment," *Land Economics* 55 (1979): 405–407.

[30]Fischel points out that concern in the NALS *Final Report* is focused on the adequacy of future food and fiber production. "Curiously enough the amenity values of farmland are hardly mentioned." See Fischel, p. 3.

[31]Jack Carr and Lawrence B. Smith, "Public Land Banking and the Price of Land," *Land Economics* 51 (1975): 316–30.

[32]E.C. Pasour, Jr., "Public Land Banking and the Price of Land: Comment," *Land Economics* 52 (1976): 558–64.

[33]Leon E. Danielson, *Land-Use Planning in Rural Areas: Policy Alternatives*, Center for Rural Resource Development Report no. 10 (Raleigh: North Carolina Agricultural Extension Service, 1978).

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the power of eminent domain is used in the case of fee simple purchase or purchase of development rights, of course, participation is no longer achieved through economic incentives.

The creation of agricultural districts is still another means used to protect farming operations and provide economic incentives to preserve farmland. New York's Agricultural Districts Law, enacted in 1971, for example, grants tax relief and discourages urbanization through restrictions on eminent domain and local government ordinances that affect agriculture.[34] The property owner retains the option to sell his land at any time he chooses. While participation in the New York program is voluntary, a similar Wisconsin program initiated in 1977 is voluntary at the county level but not for the individual landowner.

The zoning ordinance remains the most common means of implementing land-use plans in the urban fringe[35] and has often been imposed to preserve open space, to manage growth, and so on.[36] Agricultural zoning, an involuntary regulation proposed to protect agricultural land from the standpoint of food supply, incompatible uses, or both, may be either exclusive or cumulative.[37] In an exclusive agricultural zone, agriculture and its related farm buildings are the only uses allowed.[38] Under cumulative zoning, both agricultural and nonfarm residences are permitted. There is a long history of political failure and corruption associated with zoning where approval for zoning changes is secured through political influence and payoffs.[39] In view of this, it is ironic that agricultural zoning is now proposed as a measure that "would significantly improve the efficiency of land use in farming areas."[40]

Evaluation

Of the two important questions concerning the effects of land-use controls, most agricultural economists have focused on the first: Are the controls effective in protecting agricultural land? In the case of use-value taxation, the qualifying landowner often obtains a significant reduction in taxes, but use-value legislation has had little effect

[34]Ibid.

[35]Ibid.

[36]Nelson.

[37]See ibid., p. 1.

[38]Danielson.

[39]John A. Gardiner and T.R. Lyman, *Decisions for Sale: Corruption and Reform in Land-Use and Building Regulation* (New York: Praeger, 1978).

[40]Nelson. p. 44. See also David Ervin et al., *Land Use Control: Evaluating Economic and Political Effects* (Cambridge, Mass.: Ballinger, 1977), p. 100.

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on the conversion of agricultural land to nonagricultural uses.[41] Use-value taxation does decrease the cost of holding land in agriculture, especially in rapidly urbanizing areas. In such areas, however, potential gains from development are likely to swamp any tax advantages there may be in keeping land in agriculture. Thus, measures that are effective in retaining land in agriculture are likely to necessitate either *involuntary* controls or higher taxes for the non-farm population. Incentive programs, such as fee simple purchase, public land banking, and purchase of development rights *can* be effective in protecting land but involve a high, direct taxpayer cost.[42]

A second, more basic question about land-use controls to protect agricultural land has been largely neglected: Are such programs beneficial? If the government wishes to protect farmland or open space, an incentive program is clearly preferable to involuntary controls, since willingness to incur the required expenditures provides a test of the value placed on retaining farmland or open space. If, for example, open space is obtained through zoning and the cost is borne by owners of the zoned land, the demand for environmental amenities will be overstated. A more important issue, however, concerns the desirability of protecting agricultural land. Nelson suggests that agricultural zoning is beneficial since it can extend the life of farming in a region.[43] Fischel describes "right to farm" legislation as a "sensible approach" in protecting farmers from nuisance suits or other controls designed to restrict farm operations.[44]

The conclusion that zoning and other measures should be used to protect agricultural land ignores an important question: What is the "optimal" amount of land in agriculture? Nelson recommends "widespread adoption of agricultural zoning along with other features of agricultural districting" for farmland near metropolitan areas as a way to "maintain the existing farming way of life against threats of piecemeal residential intrusion."[45] Proposals to "protect agriculture from premature conflicts with residential uses" raise a number of questions: How does one define and identify cases of premature conflicts? At what point is the competition of land for non-agricultural uses not premature? Does the fact that a group of farmers desire to continue farming mean that the efficiency of land use will be increased if agricultural districts, zoning, or other measures are used to keep

[41]Danielson.

[42]Taxpayer cost is higher, of course, in the case of fee simple purchase than where only development rights are purchased.

[43]Nelson, p. 12.

[44]*Fischel*, p. 19.

[45]Nelson, p. 15.

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land in agriculture? How does one ensure that regulations will not be used to keep land in agriculture when it has a higher value in other uses? Justifying the protection of agricultural land on the basis of local economic benefits ignores the fact that a tract of farmland is converted to nonfarm use only when its expected value in other use exceeds its agricultural value.

Zoning classifications can be conceived of as involving either permanent or transitional categories of use. A case can be made for transitional zoning as a way of minimizing land-use conflicts when incentive and information problems are minimized or ignored. However, agricultural zoning is now being recommended as a permanent rather than a transitional category of use, which means that it is designed to prevent converting land to other uses regardless of cost. Fischel suggests that the real forces behind the farmland preservation movement are local anti-development interests: ". . . zoning for farms appears to be a means by which initial nonfarmer immigrants effectively 'pull up the gangplank' to keep subsequent immigrants out."[46] Consequently, one cannot be confident that zoning originally conceived of as involving transitional categories of use will not become permanent zoning. At any rate, in evaluating the likelihood that nonmarket land-use controls will improve the efficiency of land use, it is important to take implementation problems into account.[47]

Implementation Problems

When real world political processes are compared with an ideal polity norm, government failure is as inevitable as is market failure in comparing real world markets with the perfect competition norm. Thus, finding market failure does not warrant government intervention unless it can be demonstrated that the outcome will be superior, given the inevitability of government failure. In evaluating the likelihood that nonmarket approaches will improve the efficiency of land use, first consider the information and incentive problems endemic in central direction.

Information Problems

The basic economic problem in the context of this paper is to secure the best use of land resources utilizing the knowledge of all members of society for ends whose relative importance only these individuals

[46]Fischel, p. 22. See also Ervin et al., pp. 161–62.

[47]Charles Wolf, Jr., "A Theory of Nonmarket Failure: Framework for Implementation," *Journal of Law and Economics* 22 (1979): 107–40.

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know.[48] Market prices of land coordinate and transmit widely dispersed information more effectively than is possible through any other known method. Moreover, the factors that cause land prices to increase or decrease and thereby guide the behavior of decision makers are influences that would need to be taken into account in any conceivable system of coordinated economic activity.[49] Increased demand for land in housing, golf courses, and other uses is transmitted through the price system and reflected in higher prices paid for such land. The information influencing choices by buyers and sellers of land is decentralized and cannot be objectively determined except as revealed by the actions of market participants.[50] Thus, there is inevitably a loss of valuable information when land price signals are suppressed or overridden by zoning and other land-use controls. Moreover, the profit motive gives private entrepreneurs an incentive to discover new opportunities for satisfying consumer preferences, which makes land markets very responsive to ever-changing circumstances.[51] Land use planning through nonmarket methods, on the other hand, cannot readily adapt to change.[52]

What are the implications of viewing the market as an information and discovery process? Von Mises and Hayek demonstrate in the "economic calculation debate" that market prices are necessary in achieving efficient resource use.[53] The importance of the price system in coordinating and transmitting information, however, is ignored by most advocates of land-use planning. There is a failure to recognize the information problems that are inherent in *all* nonmarket allocation procedures. In proposals to institute "comprehensive land-use planning," for example, land classification is often suggested as a means of allocating land to various uses. A proposed land policy program for North Carolina recommends that all land in the state be classified on a county-by-county basis into one of five different classes:

[48]F.A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948).

[49]David Ramsay Steele, "Posing the Problem: The Impossibility of Economic Calculation Under Socialism," *Journal of Libertarian Studies* 5 (1981): 7–22.

[50]See Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), pp. 217–18.

[51]F.A. Hayek, *New Studies in Philosophy, Politics, Economics and the History of Ideas* (Chicago: University of Chicago Press, 1978), p. 236.

[52]E.C. Pasour, Jr., "Preserving Agricultural Land: Lessons from the Economic Calculation Debate," paper presented at a conference on "Agricultural Land Preservation: Economics or Politics," Political Economy Research Center, Bozeman, Montana, June 10–13, 1982.

[53]Karen I. Vaughn, "Economic Calculation Under Socialism: The Austrian Contribution," *Economic Inquiry* 18 (1980): 535–54.

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developed, transition, community, rural, and conservation.[54] Preservation of "good agricultural land" is a major focus of the program, and it is recommended that local land classification plans should discourage urban development on prime agricultural lands except when no other alternative exists. Prime agricultural land, however, is quite often even more productive in nonagricultural uses. Moreover, alternatives are always available at some location. Thus, land classification is not a realistic alternative to market prices in resource allocation. The "comprehensive land-use planning" movement fails to recognize that, aside from the market, there is no objective procedure to determine which land parcels to retain in agricultural and other uses either now or in the future.

Information problems also arise in attempts to mandate optimal conservation practices. Conservation is an investment problem and should be judged by criteria similar to those used in evaluating other investments. Profitable management and conservation practices can be determined only by comparing the expected costs and benefits of these practices. Moreover, since costs and benefits occur over time, there is no reason to expect the evaluation of a particular conservation measure by an outside observer to correspond to that of the decision maker under real world conditions of uncertainty.[55] In evaluating investments in conservation measures, the economist has no objective procedure (aside from the survivor principle) to identify inefficient resource use. Thus, attempts to determine and mandate optimal levels of soil conservation face the same problems as other attempts to second-guess real world decision makers.[56]

Incentive Problems

Political problems also arise in instituting nonmarket land-use controls because of perverse incentives. First, when compared with the market, the political process is short-run oriented, since the political decision maker's power is frequently determined by the results of the next election.

Second, the incentive structure of government is such that the self-interest of the political decision maker dictates that he "play it safe." Decision makers in the private sector, receiving the benefits of good

[54]North Carolina Land Policy Council (NCLPC), *A Land Resources Program for North Carolina* (Raleigh: NCLPC, 1976).

[55]For a vivid description of the subjectivity associated with investments in equipment, see G.L.S. Shackle, *Epistemics and Economics* (London: Cambridge University Press, 1972), pp. 18–19.

[56]E.C. Pasour, Jr., "Conservation, 'X-Efficiency' and Efficient Use of Natural Resources," *Journal of Libertarian Studies* 4 (1979): 371–90.

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decisions and bearing the costs of poor ones, have an incentive to use resources most effectively to accommodate consumer desires. In the case of government bureaucracy, where the payoff from a risky course of action does not accrue to the decision maker whereas the cost does, there is a strong incentive to avoid risk. This factor is likely to be important in changing zoning regulations and other land-use controls that once were instituted regardless of any potential increase in economic efficiency associated with change.

Third, in addition to the possibility of government failure in the implementation of land-use controls, such controls may also distort market behavior by affecting the decisions of landowners, anti-growth advocates, and other individuals. Regulation creates an incentive for landowners to obtain tax, subsidy, or regulatory favors rather than focusing on cost-saving methods of production. Agricultural zoning that prevents or restricts the conversion of agricultural land, for example, generates countermeasures, including landowners lobbying through farm organizations, hiring lawyers to find loopholes, and so on. Generally, an individual must act as part of an organized pressure group to be effective on an issue decided through the political process.

Fourth, although land-use planning through the political process is presumably based on widespread citizen participation, any land-use plan must be carried out by government officials. Decisions are reached through a political process dominated by special interest groups with narrow interests. When benefits or costs are highly concentrated, particular land-use decisions are likely to be decided by small groups. As a result, political decision makers are interested in "biased samples" of preferences: "So long as those who govern are held responsible by the governed through citizen participation, political decision makers and participants will seek advantages through the system by disadvantaging nonparticipants."[57]

Finally, governmental monitoring of activities relies on the cooperation of those whose interests are markedly affected by any reforms or changes that might be implied.[58] Consider, for example, an analysis of soil erosion by the Soil Conservation Service (SCS). How likely is it that a study conducted by SCS personnel at the local, state, or national level will conclude that there is a reduced need for conservation measures or for reduced public expenditures and SCS person-

[57]Ervin et al., p. 59.

[58]John A. Baden and Richard L. Stroup, "The Environmental Costs of Governmental Action," *Policy Review* 4 (1978): 23–26.

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nel? This problem is graphically described by Brewer and Boxley in the case of the NALS:

> Can special analyses of agricultural land adequacy . . . be assured of objectivity? Many interested parties have a stake in the conclusions and recommendations of such inquiry. Payoff can be in the form of expanded bureaucratic turf, larger budgets for particular agencies, . . . or personal enhancement. . . . Absent a strong and neutral oversight body to shield researchers . . . their work is vulnerable to influence, to misrepresentation in the public media, or to being withheld entirely from the media.[59]

In view of the incentive and information problems inherent in nonmarket land-use controls, it can hardly be overemphasized that the actual incidence of governmental failure must not be confused with the incidence that would occur if decision makers in government were not constrained by information and incentive problems in following the dictates of welfare economics.[60]

Conclusions and Implications

The key issue in the case of land resources concerns the most effective way of allocating land to agricultural and nonagricultural uses. There are basically only two ways of planning land use: the market process; and central planning involving local, state, or federally administered land-use controls. Despite the widely acknowledged merit of the market in facilitating efficient resource use and material output, various measures are being proposed and implemented to change the pattern of land use. Use-value taxation, fee simple purchase, and purchase of development rights rely on financial incentives to induce owners of agricultural land to retain more land in agriculture. Nonvoluntary agricultural districts, agricultural zoning, land classification, and other regulations represent a transfer of decision-making authority from individuals to collective bodies.

There are two important questions concerning any land-use measure intended to protect agricultural land, whether based on economic incentives or regulations. First, will the measure achieve its stated goal? A land-use control that effectively retains land in agriculture will be costly in terms of tax revenue, or it must be involuntary. Second, will measures to protect agricultural land increase the efficiency of land use? Land shifts out of agriculture because it is

[59]Michael F. Brewer and F. Boxley, "Agricultural Land: Adequacy of Acres, Concepts, and Information," *American Journal of Agricultural Economics* 63 (1981): 886.

[60]Alan Peacock, "On the Anatomy of Collective Failure," *Public Finance* 35 (1980): 33–43.

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economically more productive in other uses. Since the difference in the value of land converted from agricultural to nonagricultural uses is often quite high, a significant reduction in the conversion of agricultural land has a high opportunity cost.[61]

The theoretical foundation of nonmarket land-use controls is deficient in the sense that no way has been found to rationally allocate land to various uses through central economic planning due to the separation of knowledge and power. If the knowledge of market participants is *consciously* ignored, what criteria are to be used in land-use decisions? When information and incentive problems are considered, there is no basis for thinking that a more efficient pattern of land use can be achieved through central planning as suggested in the NALS: "The goals of protecting agricultural land and guiding urban growth are best achieved in combination with a comprehensive growth management system."[62] Yet, the failure to recognize the inherent limitations of comprehensive land-use planning as revealed by the "economic calculation debate" 50 years ago is not acknowledged by many economists, including some specializing in the economics of land use.[63] Raleigh Barlowe, a well-known land economist, summarizes the requirements for a successful farmland protection policy: ". . . official guidelines should be issued . . . indicating the criteria that should be used to designate the area to be protected and also the quota of acreage that should be protected in each region or county."[64]

There are also incentive problems endemic to nonmarket land-use controls due to the separation of authority from the costs and returns associated with various programs affecting land use. Even if the person in authority could obtain the information necessary to act in the public interest, the bureaucratic advantages of increased personnel and budget favor actions by government officials that perpetuate and increase controls regardless of their effects on land use.

[61]Crosson.

[62]NALS, *Final Report*, p. 18.

[63]The implications of the Von Mises-Hayek arguments were apparently not recognized even at Chicago. In his recent discussion of the history and meaning of Chicago economics, Reder makes the following statement about the appointment of Oscar Lange, a central figure in the "economic calculation debate" and a leading proponent of "market socialism": "His work on the use of the price system to allocate resources in a socialist economy was widely considered to be a definitive answer to the Mises-Hayek attack on the economic efficiency of socialism. . . ." See Melvin W. Reder, "Chicago Economics: Permanence and Change," *Journal of Economic Literature* 20 (1982): 4.

[64]Raleigh Barlowe, "Your Stake in a Land Use Policy," in *Pressing Land Use Issues*, MP416 (Columbia: Missouri Agricultural Extension Service, 1974), p. 2.

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Conventional welfare theory suggests that agricultural land and soil resources should be preserved beyond the level dictated by market forces whenever there are spillovers.[65] Market failure based on the idealized perfect competition norm, however, offers no *prima facie* case for political land-use controls. All institutions fall short when judged against some ideal. When incentive and information problems are taken into account, the problem of government failure appears to be fully as important as market failure.[66] The relevant comparison is between real world markets and real world political institutions.

Land use in rural areas of the United States has been largely planned for 200 years without land-use controls. None of the reasons commonly cited for governmental intervention to protect agricultural land can withstand careful scrutiny. The success of American agriculture is ample proof that farmers are competent entrepreneurs, and there is no persuasive evidence that farmers shed their entrepreneurial ability when improving and maintaining soil resources. Moreover, since soil erosion is location specific, a nationally administered soil conservation program that is politically designed to provide funds and services to all geographic areas is bound to be a model of inefficiency.[67] Thus, whether in allocating land to various uses or in maintaining soil resources, there is no persuasive evidence that overriding market signals will be less damaging than political solutions have been in energy, credit, labor, and other markets.

Spillover problems arise when government fails to define and protect private property rights. Thus, the primary solution to spillover problems associated with the use of land and other resources is to clearly define property rights and make polluters legally responsible for the consequences of their actions. In a land-use system where property rights are well-defined and legally protected, externalities will be internalized.[68] In the case of public lands in the American West, there are "growing problems of overuse, overexploitation, and mismanagement of these lands—all of which derive from their essen-

[65]The conventional Pigouvian approach to natural resource policy abstracts from information and incentive problems and almost invariably concludes that intervention is warranted. See John McInerney, "Natural Resource Economics: The Basic Analytical Principles," in J. A. Butlin, ed., *Economics of Environmental and Natural Resources Policy* (Boulder, Colo.: Westview Press, 1981), p. 54.

[66]See Bruce L. Benson, "Land-Use Regulation: A Supply and Demand Analysis of Changing Property Rights," *Journal of Libertarian Studies*, forthcoming, pp. 22–23.

[67]Schultz, p. 17. See also Christopher K. Leman, "An Era of Limits," RFF *Resources*, 1982, p. 5.

[68]Robert J. Smith, "Privatizing the Environment," *Policy Review* 20 (1982): 11–50.

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tially being a commons."[69] Institutional changes to reduce property rights conflicts and improve land use is an alternative to administrative land-use controls. Privatization of agricultural land in the public domain, including BLM and Forest Service lands, would reduce the mismanagement of these lands.

Farm versus nonfarm conflicts over noise, odors, and dust from farm operations often arise when there is rapid nonfarm population growth in rural areas. Agricultural nuisance suit legislation is one approach to dealing with these conflicts. For example, North Carolina's legislation provides that agricultural operations will not legally become a nuisance because of changed conditions in the locality if the farm has been in operation for a specified period of time (e.g., more than one year) and if it is managed properly.[70] Even in the case of nuisance suit legislation, there is a question of whether it will improve the overall efficiency of land use. There would appear to be no more reason for *specific* nuisance suit legislation in the case of agriculture than for other industries giving rise to environmental spillovers. In fact, the stated purpose of the North Carolina legislation is not to reduce property rights conflicts but to conserve and protect agricultural land.[71]

In conclusion, the case for governmental intervention to protect agricultural land rests on two assumptions. First, it assumes that spillovers are important in all or many land-use decisions, Second, it assumes that spillovers from land-use controls to correct for market failure will be less than those that arise from voluntary decisions in decentralized land markets. The result of governmental regulations in a host of areas, including agricultural price supports, transportation, communications, and education, has been to stifle competition, increase consumer prices, and reduce the diversity of services offered. In view of the information and incentive problems inherent in *all* central planning, there is no reason to expect that the results of governmental intervention to protect land and soil resources will be different.[72]

[69]Ibid., p. 35.

[70]If the farm was outside the corporate limits of a city on the day the law was enacted (March 26, 1979), then all present or future local ordinances that would make the operation a nuisance are null and void so long as the farm is properly managed and without negligence. See Leon E. Danielson, *North Carolina's Agricultural Nuisance Suit Law,* AG-188 (Raleigh: North Carolina Agricultural Extension Service, 1980).

[71]Ibid.

[72]In view of the conflicts and misuse of forest, range, and other lands in the public domain, it is ironic that "comprehensive land-use planning," "protection of agricultural land," and other governmental measures are proposed to increase the efficient use of privately owned lands.

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What is the role of the economist in agricultural land-use policy? In assessing the effects of government intervention, the economist should take a principled approach, evaluating every proposed land-use control for its likely legal, political, social, and ethical repercussions.[73] In land use (as in other areas), the role of the economist is *not* to determine the optimal pattern of land use on a local, state, or national basis; a task which is clearly impossible, given the information costs referred to in this paper. Instead, the economist *qua* policymaker should attempt to identify and explain the institutional framework necessary for individual decision-makers in land (and other) markets to effectively cooperate in pursuing their own diverse ends. It is also important to explain the inherent limitations of government officials in their attempts "to do good" and to promote the public interest whether in land use or in other areas.[74]

[73]Leland B. Yeager, "Economics and Principles," *Southern Economic Journal* 42 (1976): 559–71.

[74]Richard B. McKenzie, *Bound to Be Free* (Stanford, Calif.: Hoover Institution Press, 1982), p. 173.

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INSTITUTIONAL UNDERPINNINGS OF THE WATER CRISIS

Terry L. Anderson

Traditional natural resource economists have approached water resources from a market failure perspective, in which it is generally accepted that externalities dominate water resource allocation, thereby necessitating legal restrictions on water transfers. In *Water Transfers,* Hartman and Seastone (1970) captured the traditional approach:

> In the natural resources field generally, the problem of externalities is widespread, and various organizational arrangements and regulatory measures have been adopted or proposed to cope with it. Laws have been written and established by courts to protect the third parties in water transfers. Special districts have been formed to internalize some of the externalities. The general tendency in institutional development has been to modify market procedures or completely replace them. (pp. 2–3)

In their earlier work, Seastone and Hartman gave almost no attention to the market alternative, comparing instead the judicial process to the administrative process in the allocation of water among competing uses. They concluded that "the logic of the systems suggests that the administrative process of water allocation has provided a closer approximation to efficiency criteria than has emerged from the judicial process" (1963, p. 43). They attributed the difference to the administrative agencies' use of engineering data, procedures, and personnel while the courts "relegate the engineering skills to a minor role, when the nature of scarcity demands the type of skills and data collection which the legal profession cannot provide" (p. 43). Sea-

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stone and Hartman contended that an engineering approach enables state engineers to dispassionately allocate water in a way that approximates efficiency.

As director of the water resources program at Resources for the Future, Allen Kneese examined the "Economic Related Problems in Contemporary Water Resources Management," emphasizing the inefficiency generated by third party effects or market failure. While he claimed that there was a growing conceptual and research basis for devising more efficient water transfer mechanisms, he concluded:

> It is not yet clear that the best means will be the exchange of water rights in markets because of the difficulty of arriving at reasonably certain definitions of rights when major third party effects, resulting from water quality deterioration and return flow dependency, are involved. Perhaps the most satisfactory solutions will be some mixture of market transfers of rights and administrative allocations. (1965, p. 240)

Most recently, Howe, Alexander, and Moses (1982) have argued that "if more than two users are involved . . . any transaction between two users would ignore the return flow effects on the others" (p. 383). Because of these inescapable externalities, they call for several institutional reforms. First, they claim that a more flexible water ownership system would establish "an agency that files for (or buys) water rights under state laws and sells the water produced to another entity . . ." (p. 386). Second, they call for increased reliance on conservancy districts. Third, they suggest establishing a state or interstate agency that would "make a market" in water rights. "Such an agency would stand ready to buy rights at a known schedule of prices and to sell rights to new users" (p. 388). Fourth, they argue for better climatological data and forecasting programs to improve regional water programming. Finally, they call for more training of water users, especially irrigators, so that they will more efficiently apply the water.

Contrast these conclusions with those arrived at by Johnson, Gisser, and Werner:

> Based on our findings, we would argue that the concern expressed by others that the appropriative system constitutes numerous obstacles to the efficient transfer of water is unfounded. It is not the appropriative system that is at fault but rather the manner in which rights are defined within that concept. We have demonstrated that efficient water transfer is facilitated when water rights are defined in terms of consumptive use coupled with protection for local third-party impairment. (1981, p. 288)

Johnson et al. (1981) focus on the possibility of market success, remaining skeptical of collective action as an alternative to water

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allocation via markets. By focusing on the existing structure of property rights dictated by legislation and its interpretation by the courts, they conclude that there is a great deal more room for market solutions to water problems.

The emphasis on market success rather than market failure is part of a paradigmatic shift in natural resource economics. This "new resource economics" is in many ways simply new applications of old ideas found in property rights, public choice, and Austrian economics (see Anderson, 1982). Property rights economics focuses on the rules of the game that determine who has access to and use of resources. If property rights are well-defined, enforced, and transferable, authority will be linked with responsibility and individual actors will act as if they care about social benefits and costs. Public choice economics makes us skeptical about whether collective action can generate efficiency or equity. Voting provides a very imprecise way of aggregating preferences, and bureaucratic solutions are fraught with problems of linking authority with responsibility. There is certainly no a priori reason to believe that market failure is any more pervasive than governmental failure. Finally, Austrian economics focuses on markets as a process that generates valuable information. In this process, private enterpreneurs are at the heart of decisions, recognizing opportunities for improving resource allocation. As residual claimants, entrepreneurs gain by discovering unforeseen opportunities and acting on them. The entire process is part of what Hayek has called a "spontaneous order."

By applying the new resource economics to water allocation issues, it is clear that a market solution to the water crisis is possible but that it is difficult to prevent collective action. This paper will provide a background for the institutional causes of the water crisis, beginning with a discussion of how the doctrine of appropriations facilitated market solutions during the late 19th century. By early in the 20th century, however, these institutions had changed dramatically, moving from what Alfred Cuzan (forthcoming) has termed "appropriation to expropriation." The paper will conclude with a brief outline of some suggestions for institutional reform of surface, in-stream, and groundwater rights.

The Evolution of Water Institutions

It is important to recognize that the institutions or rules of the game that govern people's behavior are produced by human action. People will devote their efforts to defining and enforcing property rights as long as their perceived additional benefits from doing so exceed their

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perceived additional costs. In this sense, establishing and protecting property rights is very much a productive activity toward which resources can and will be devoted.

At any point in time, a unique amount of effort will be put into definition and enforcement activities. Just as there are diminishing returns to putting more fertilizer on a field, there are diminishing returns to defining and enforcing activity. While the added benefits of producing property rights decline, the added costs rise. Following standard economic reasoning, resources used to protect property rights must be attracted from other higher-valued alternatives, and the opportunity cost of producing property rights rises. The combination of diminishing returns and rising costs limits the amount of resources that will be devoted to property rights production.

While this tells us that there is an equilibrium level of definition and enforcement activity, the more important question is why this level varies over time and between areas. The answer depends on the parameters that cause benefits and costs to change. The benefits will depend on the value of the asset and the degree to which definition and enforcement activity insures that the value will be captured by the owner. Any change in the price of a well-defined and enforced bundle of rights changes the return on resources devoted to producing property rights. Higher market values or greater scarcity will spur individuals to strengthen their claims to resources. Witness, for example, how as our air, water, and scenery have become more scarce, individuals or groups have attempted to better define their claims on these resources. Furthermore, an increase in the probability of losing an asset will usually result in an increase in the productivity of property rights activity. An increase in the neighborhood crime rate means that locks, burglar alarms, and watchdogs all will have higher benefits than before because each does more to insure appropriation of value. The probability of loss is also affected by such variables as population density, cultural and ethical attitudes, and the existing rules of the game or the institutional structure.

The cost of defining and enforcing property rights is a function of the quantity of resources necessary for a given amount of activity and the opportunity cost of those resources. Hence, anything that reduces the quantity of resources or lowers the opportunity cost will shift the costs. Changes in technology all cause such a shift. A perfect example is the introduction of barbed wire in the 1870s. To the homesteader whose land was invaded by cowboys and their herds, barbed wire defined his private property. It also allowed stockmen to control grazing and rotate cattle on pastures and to selectively breed their livestock.

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It should be noted that the production of property rights does not depend on formal government. As Harold Demsetz said, "... property rights arise when it becomes economic for those affected by externalities to internalize benefits and costs" (1967, p. 354). In no place was this more evident than on the American frontier. Since the early settlers preceded the legal machinery of state and federal government, they found it necessary to generate their own rules. Without the power of coercion granted to government, those rules depended on voluntary agreements among the settlers. Wagon trains, cattlemen's associations, and mining camps all provide excellent examples of the evolution of social contracts.[1] Not all people had equal power in the bargaining process, and in some cases the six-gun introduced an element of coercion; but the image of the wild West often ignores the important role that contracts played in establishing property rights. This is no more evident than in the evolution of Western water rights.

Riparian vs. Prior Appropriation[2]

To the frontiersmen entering the Great Plains, it was clear that access to water was a prime factor in considering a location. Hence, initial settlement patterns can be traced to the river and stream bottoms. If an individual found a stream location taken, he simply moved on to another water supply. Under these circumstances, the right to use the water accrued to whoever owned the stream bank and had access to it by virtue of position.

It is not difficult to understand why such riparian water rights, whether implicit or explicit, were adopted by the frontiersmen. First, these rights found historical precedent in Eastern laws, which were in turn borrowed from English common law. Early judges and lawyers were only familiar with Eastern law and thus transferred it to the legal system in the West. Second, riparian rights were appropriate to the factor endowments of the region. Initially, land with adjacent water was abundant relative to the number of settlers; that is, water was not a relatively scarce factor. As long as these conditions held, rights that granted all riparian owners equal use of the flowing stream sufficed for resource allocation. The benefits of changing the institutions that governed water were not sufficient remuneration for the time and effort required to initiate the change.

Two factors, however, worked to change the benefits and costs of altering property rights over water. First, mining technology neces-

[1]For a more detailed discussion of the establishment of property rights through contracting, see Anderson and Hill (1979) and Umbeck (1977).

[2]This section of the paper draws heavily on the work of Cuzán (forthcoming).

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sitated that water be taken from the stream and moved to non-riparian locations. Since the riparian rules required that all owners have a right to an undiminished quantity and quality of water, diversions for mining and irrigation were not feasible. Second, vast amounts of public land meant that individuals did not own riparian land and, therefore, could have no riparian rights.

Since the California mining camps were the first to feel major population pressure, it is not surprising that miners played an important role in the evolution of the prior appropriation doctrine. As Charles McCurdy writes:

> Following a tradition of collective action on the mining frontiers of other continents, the miners formed districts, embracing from one to several of the existing "camps" or "diggings" and promulgated regulations for marking and recording claims. The miners universally adopted the priority principle, which simply recognized the superior claims of the first-arrival. . . . The miner's codes defined the maximum size of claims, set limits on the number of claims a single individual might work, and established regulations designating certain actions—long absence, long diligence, and the like—as equivalent to the forfeiture of rights. A similar body of district rules regulated the use of water flowing on the public domain. (1976, pp. 236–37)

The miners quickly realized that gold was found not only along stream beds, where pan, shovel, and rocker were sufficient to extract the precious mineral. With deposits several miles from water, it made economic sense to appropriate water from the streams. Thus, McCurdy tells us that: "It universally became one of the mining customs that the right to divert and use a specified quantity of water could be acquired by prior appropriation" (p. 254). These customs, according to Kinney, had:

> one principle embodied in them all, and on which rests the "Arid Region Doctrine" of the ownership and use of water, and that was the recognition of discovery, followed by prior appropriation, as the inception of the possessor's title, and development by working the claim as the condition of its retention. (1912, p. 598)

While there is no question that the original mining law was aimed at establishing private rights to water through appropriation, disputes over rights led to court cases, which in turn led to conflicts with the riparian doctrine of common law. Judges were torn between their training, which had taught them that decisions ought to "conform, as nearly as possible, to the analogies of the common law," and the Western traditions that law "ought to be based on the wants of the community and the peculiar conditions of things . . . rather than any

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absolute rule of law."[3] The tension between riparian and prior appropriation doctrines is reflected in some courts finding appropriative principles "impractical" and others holding that cases "must be decided by the fact of priority." The result was an interesting and eventually harmful mix of Eastern and Western law. Webb captures the nature of the mix:

> The Easterner, with his background of forest and farm could not always understand the man of the cattle kingdom. One went on foot, the other went on horseback; one carried his law in books, the other carried it strapped round his waist. One represented tradition, the other represented innovation; one responded to convention, the other responded to necessity and evolved his own conventions. Yet the man of the timber and the town made the law for the man of the plain; the plainsman, finding his law unsuited to his needs broke it and was called lawless. (1931, p. 206)

From Eastern law came such concepts as usufruct, beneficial use, and reasonable use. From the Western mining camps and cattle ranges came absolute property, equal footing for uses, and transferable ownership rights. The riparian doctrine maintained an element of common property by continuing to support the view that riparian owners have co-equal rights on the water. That is, when water is put to new uses, existing riparian users may be required to cease current uses to make way for new ones. That riparian rights are generally not transferable further restricts the possibility of market allocation.

The doctrine of appropriations, on the other hand, established ownership rights that were clearly defined, enforced, and transferable. Rights were absolute and not co-equal. As a result, markets were left to determine the value of water. The California courts asserted that "a comparison of the value of conflicting rights would be a novel mode of determining their legal superiority."[4] "Anyone might take and use water flowing on the public domain for any beneficial use subject only to the rights of any prior appropriators" (McCurdy 1976, pp. 257–58). The doctrine of appropriations gave no preference to riparian landowners, allowing all users an opportunity to compete for water and to develop far from streams. Appropriations were limited according to the means used for appropriating or the reason for the appropriation.

In many cases, disputes arose and courts were called on to define rights. While cases were often complex and complicated, Judge Stephen J. Field contended that "the courts do not . . . refuse the consideration of subjects, because of the complicated and embarrassing

[3]*Hoffman* v. *Stone*, 7 Cal. 46, 48 (1857).

[4]*Weaver* v. *Eureka Lake Co.*, 15 Cal. 271, 175 (1860).

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character of the questions to which they give rise."[5] The Field Court continually worked to define and enforce rights in order to promote efficient markets. Even pollution, which frequently occurred in the mining process, was handled by having polluters pay damages to those users who received lower quality water downstream. The impact of the Field Court decisions has been summarized by McCurdy:

> By converting the possessory claims of so many trespassers into judicially-cognizable property rights, the California court effectively brought federal land-use policy into the realm of private, and, in some instances, constitutional law. . . . Moreover, the court also mobilized the still inchoate "public purpose" and due process doctrines to prohibit the miners' "primary assemblages," as well as the state legislature, from using the organized power of the community to divest the equitably-acquired claims of men who had evinced a growth inducing "incentive to improvement." . . . Field believed that only the courts were capable of resolving allocation problems so as to simultaneously protect property rights, release entrepreneurial energies, and provide all men with an equal opportunity to share the material fruits of a vigorously-expanding capitalist society. (1976, pp. 264–66)

The law that evolved in the West reflected the greater relative scarcity of water in the region. As the settlers devoted more efforts to defining and enforcing property rights, a system of water law evolved, which:

1. Granted to the first appropriator an exclusive right to the water and to later appropriators conditioned on the prior rights of those who have gone before;
2. Permitted the diversion of water from the stream so that it could be used on non-riparian lands;
3. Forced the appropriator of water to forfeit his right if the water was not used, and;
4. Allowed for the transfer and exchange of rights in water between individuals.

Private Water Development

While the doctrine of appropriation was evolving in the mining camps, private institutions were developing to capture and deliver the water to where it was needed. One usually thinks of large federal reclamation projects as the main impetus to Western irrigation, but private development was dominant on the frontier. The American Indians and the Spaniards were the first to irrigate the American

[5]*Butte Canal and Ditch Co.* v. *Vaughan*, 11 Cal. 143, 152 (1858).

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West, followed by groups such as the Mormons, who had 16,000 acres of irrigated lands under cultivation by 1850, 263,500 acres by 1890, and 1,176,116 acres by 1940 (Golzé 1961, p. 6).

Cooperative colonies also significantly contributed to early irrigation development. The Greeley Colony, named after its founder Horace Greeley, brought 32,000 acres under irrigation and set the stage for irrigation development in Colorado. The Anaheim Colony in California also demonstrated that private savings could finance the construction of irrigation canals. The main group stayed in San Francisco to work at their normal occupations in order to finance the colony, while others worked on producing crops on 20-acre, privately owned parcels irrigated by communally owned canals.

The contributions of private reclamation projects should not be underestimated. By 1910, over 13 million acres of land in the West were irrigated by private ventures. Between 1900 and 1910, the number of irrigated acres grew by 86.4 percent, with private enterprise accounting for almost all of the increase (Golzé 1961, p. 13; see Table 1). Even though public development greatly increased after the Reclamation Act of 1902, private development continued to provide a significant portion of the new irrigation development.

Many different forms of business organization were used to develop Western irrigation. For the smaller projects, especially in the mining districts, individuals and partners had sufficient funds to undertake the necessary investments. As already noted, the cooperative ventures of the Greeley and Anaheim colonies also contributed significantly. In 1920, cooperative ventures, including incorporated, unin-

TABLE 1

PRIVATE IRRIGATION DEVELOPMENT IN 17 WESTERN STATES
(in acres)

Census	Total Irrigated Acreage	Furnished Government Water	Private Development
1890	3,631,381	—	3,631,381
1900	7,527,690	—	7,527,690
1902	8,875,090	—	8,875,090
1910	14,025,332	568,558	13,456,774
1920	18,592,888	2,388,199	16,204,769
1930	18,944,856	3,049,970	15,894,886
1940	20,395,043	3,800,239	16,594,804
1950	24,869,000	5,700,000	19,169,000

SOURCE: Golzé (1961, p. 14).

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corporated, and irrigation districts, irrigated more acres than individuals and partnerships did (see Table 2).

The private irrigation companies or mutual corporations usually organized themselves around six important rules:

1. The company issued shares of stock which were similar to any privately owned corporation.

2. Each share was treated equally with the total number of shares equaling the capacity of the irrigation system. Available water in any given year was prorated according to stock ownership.

3. The shares of stock were transferable with prices determined in the marketplace. In most cases, owners could rent any or all of their water rights.

4. The expenses incurred by the company for operation, maintenance service, and retirement of debt were also prorated according to stock ownership.

5. Stockholders' liability was not limited. The land of the stockholder could be used as a lien against any financial obligations of the mutual.

6. Private irrigation companies had the power to condemn land for right-of-way, provided they paid just compensation (Smith, forthcoming).

These rules are especially significant since they further contrib-

TABLE 2

AREA IRRIGATED IN 17 WESTERN STATES, BY TYPE OF ENTERPRISE

Item and Type of Enterprise	Primary Enterprises (acres)		
	1920	1930	1940
Individual and partnership	6,448,663	6,038,835	6,906,738
Cooperative, incorporated	6,569,690	6,271,334	5,706,606
Cooperative, unincorporated			907,242
Irrigation district	1,822,887	3,452,275	3,514,702
Reclamation district	—	—	59,052
Commercial	1,635,027	999,838	855,166
Bureau of Reclamation	1,254,569	1,485,028	1,824,004
Bureau of Indian Affairs	284,551	331,840	515,765
State	5,620	11,472	16,995
City and/or sewage	40,146	121,218	83,457
Other	531,735	233,016	5,316
TOTAL	18,592,888	18,944,856	20,395,043

SOURCE: Golzé (1961, p. 99).

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uted to the operation of private markets in the West. By using members' assets as collateral, mutuals could enter capital markets to obtain the investment funds necessary to develop irrigation projects. The transferability of stocks insured that water could be moved to higher-valued alternatives, further insuring the success of the operation. These features, combined with the security of rights provided by the doctrine of appropriation, stimulated an effective marketplace. Writing in 1903, Elwood Mead concluded that investment with corporate capital in canals:

> has been the leading factor in promoting agricultural growth of the Western two-fifths of the United States. It has been the agency through which millions of dollars have been raised and expended, thousands of miles of canals constructed, and hundreds of thousands of acres of land reclaimed. It has been the chief agency in replacing temporary wooden structures by massive headworks of steel and masonry, and, by the employment of the best engineering talent and the introduction of better methods of construction, has promoted the economy and success with which water is now distributed and used. (p. 57)

In discussing the water deeds or water-right contracts of the Colorado ditch companies, Mead concluded that ". . . if the water of streams is public property, the public should show the same business ability in disposing of its property as those to whom its control is transferred. Colorado can learn something about the management of the water of streams by studying how canal companies dispose of the water which they appropriate" (p. 167).

Summary

During the last half of the 19th century, the foundation was laid for an effective water market. Following the doctrine of prior appropriation, water rights were defined, enforced, and made transferable. In part, it was a sense of justice that led the early settlers to allocate water rights on the basis of "first in time, first in right." Out of this doctrine, however, grew an efficient set of institutions that allowed individual actors in the marketplace to determine the best uses of water. Authority was linked to responsibility, giving water owners the incentive to seek out the best uses of their resource. The scarcity of water west of the 100th meridian increased the benefits of activities designed to establish and enforce exclusively. It is, therefore, not surprising to find that in Montana, Wyoming, Colorado, and New Mexico where rainfall averages 15 inches per year, the common law was eventually abrogated, while in North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas, common law was retained

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in a modified form. The evolution of water law on the Great Plains was a response to changes in the benefits and costs of defining and enforcing rights to a valuable resource.

With an efficient set of water institutions in place, private individuals undertook projects to deliver water where it was demanded. Well-defined, exclusive rights provided the necessary tenure security to stimulate private investment. A variety of organizational structures were used to mobilize the necessary capital for building dams to store the water and aqueducts to deliver it. Irrigation and mining activities received most of the water, but population growth meant that municipal demands also had to be served. The leaders of the reclamation movement at the turn of the century were correct in asserting that without the application of water, Western lands would not be very productive. They failed to recognize, however, how effectively private institutions and markets could serve this purpose. Thousands of miles of ditches were constructed and millions of acres blossomed as a result of entrepreneurial efforts to employ water.

None of this should imply that water rights and markets are without defects. Resources had to be used to define and enforce water rights and to resolve disputes, which continually arose over who was first in time and what quantities of water were claimed. Water markets operated in a region and a time where information travelled slowly and risks were great. As a result, mobilization of capital for water development was not easy. The spontaneous order of the American frontier was an experiment with the evolution of property rights. Since the actors in that experiment had to bear the consequences of their actions, they developed institutions that conserved on the resources with which they worked.

Since the economic returns available on the frontier were associated with natural resources, the first generation of Westerners developed an institutional framework that promoted efficient allocation of those resources. In this way, they were able to increase their wealth despite harsh conditions. The new rules of the game unleashed the productive potential of entrepreneurs and allowed for what James Willard Hurst called the "release of energy." Today, wealth in the West still depends on natural resources, but we seem to have lost sight of the importance of private property rights and entrepreneurship.

What Went Wrong?

While the system of property rights that evolved in the American West was not perfect, it provided no good reason for the extent of

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governmental intervention that has occurred during the 20th century. The early development of water institutions took place outside the framework of formal government, with contracting forming the basis of water rights and markets. Eastern institutions and laws were often not suited to the resource endowments of the American West and had to be modified or abandoned. When the courts arrived, the lawyers who manned them brought the baggage of Eastern law and formal powers of the federal government with them. As a result, it did not take long for the institutions to be changed. Perhaps the Colorado mining district knew what it was doing when it resolved that ". . . no lawyer be permitted to practice law in this district under penalty of not more than fifty nor less than twenty lashes, and be forever banished from the district."[6]

Rent Seeking Through Water Institutions

The economist defines rent as the return from the employment of a resource that exceeds the opportunity costs of that resource. Rents, therefore, provide a dynamic force to which entrepreneurs respond. It is this rent that entrepreneurs try to capture when they move resources from lower- to higher-valued uses. When others observe these rents, they try to replicate the activity in an effort to capture a share. As long as property rights are well-defined and enforced, the only way an entrepreneur can do this is to improve resource allocation. In this sense, the entrepreneur provides the only free lunch available to society. As long as entry and exit from markets are possible, rents will signal opportunities for efficient reallocation of resources. Efforts at such reallocation are known as productive or pie-enlarging activities.

Rents can also be obtained by using the coercive power of government to restrict entry or exit into a particular endeavor or to redistribute existing rights. Suppose, for example, that a firm's production is generating water pollution. If this firm succeeds in having legislation passed prohibiting new firms from having such pollution, the existing firm will capture some rents. Similarly, if a special interest group successfully obtains subsidies for water development, the subsidies will represent a redistribution of income and rents to those who receive the water.

Such efforts to influence governmental decisions are known as rent seeking. There is a possibility of rent seeking when the government can create barriers to entry and redistribute rights. Under these con-

[6]Quoted in Beadle (1882, p. 478).

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ditions, entrepreneurial talents will be attracted to the political arena where they will be used to influence decisions. Since rent seeking represents a taking from one group and a giving to another, both losers and gainers will devote entrepreneurial talents to influencing political decisions. Rent seeking, then, becomes a negative-sum game that reduces the size of the pie. As long as entrepreneurs perceive that any rents exist, we can expect continued competition among rent seekers to dissipate the gains. The important point to remember is that this competition uses valuable resources.

The Founding Fathers understood that self-interested individuals would attempt to use the government for rent seeking, so they erected constitutional barriers to prevent it.[7] The contract clause, the commerce clause, and the due process amendments were all interpreted by the Supreme Court during the most of the 19th century in ways that reduced the prospects for rent seeking. By not allowing the government to interfere with contracts or exchange (commerce) and by insuring that rules of law had to be followed, Court interpretations encouraged productive activity, which generated substantial economic growth. During the last quarter of the 19th century, however, the door was opened for rent seeking as more and more regulation of the marketplace was introduced.

It is important to ask how rent seeking in water could occur in light of constitutional barriers and the fairly well-established water rights discussed above. The first justification for governmental intervention centered on the uniqueness of the resource. The constantly changing physical nature of water makes it more difficult to define and enforce rights to it. In Blackstone's words, "For water is a moving, wandering thing, and must of necessity continue to be common by the law of nature; so that I can only have a temporary, transient, usufructury property therein."[8] After John Wesley Powell's survey of the Rocky Mountain region, people were keenly aware of how important water was in the arid West.

While it is true that water could make "the desert bloom even as a rose" and that it is a moving, wandering thing, it does not follow that water is so unique that it requires governmental allocation. Water certainly is necessary for life, but we can survive on very minimal quantities of it. Clothing and shelter are also necessities, but this

[7]For a more complete discussion of constitutional barriers to rent seeking, see Anderson and Hill (1980).

[8]Quoted in Webb (1931, p. 434).

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does not justify public allocation of them.[9] Nevertheless, according to Hirshleifer et al., it is a widely held belief "that private ownership is unseemly or dangerous for a type of property so uniquely the common concern of all" (1960, p. 367).

Paraphrasing a section of the Water Rights Act of Iowa (substituting land for water), Hirshleifer et al. illustrate the absurdity of the uniqueness argument:

> *Land* occurring in any valley, or along any water course or around any other natural body of water in the state, is thereby declared to be public *land* and the public wealth of the people of the State of Iowa and subject to use in accordance with the provisions of this act, and the control and development and use of *land* for all beneficial purposes shall be in the state, which, in the exercise of its police powers, shall take such measures as shall perpetuate full utilization and protection of the *land* resources of the State of Iowa. (1960, p. 367)

Although most people would not accept this reasoning for the control of land resources, it has been used to further public allocation of water.

Other arguments for governmental involvement in water have focused on three types of market failure: monopoly, imperfect capital markets, and externalities. Early water reformers continually feared that private water supplies would constitute a natural monopoly, which would allow suppliers to charge high prices for the resource. As William E. Smythe put it:

> If we admit the theory that water flowing from the melting snows and gathered in lake and stream is a private commodity belonging to him who first appropriates it, regardless of the use for which he designs it, we have all the conditions for a hateful economic servitude. Next to bottling the air and sunshine no monopoly of natural resources would be fraught with more possibilities of abuse than the attempt to make merchandise of water in an arid land.[10]

Although Major Powell recognized that the cheapest and most dependable source of water was from water companies selling at a profit, he was concerned with "the danger of an evil monopoly which would charge an exorbitant price and force the homesteaders to pay

[9]Regarding the uniqueness argument for water regulation, Hirshleifer et al. (1960) have stated: "This is not to deny that, as a commodity, water has its special features; for example, its supply is provided by nature partly as a store and partly as a flow, and it is available without cost in some locations but rather expensive to transport to others. Whatever reason we cite, however, the alleged unique *importance* of water disappears upon analysis" (pp. 4–5).

[10]Quoted in Alston (1970, p. 128).

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a heavy tribute.[11] This concern contributed to the rise of governmental involvement in the control of water rights and distribution.

The concern with monopoly, however, has little empirical basis. While it is true that water companies sold a product that was fairly inelastic in demand, many of those companies were not financially profitable, which suggests that their so-called monopoly power was not that great. There are three reasons for this. First, companies did compete with one another to provide irrigation water to the same regions. If one company raised its price too much trying to appropriate settlers' rents, the settlers could move to lands irrigated by cheaper water. With the development of technology that allowed irrigation from groundwater sources, this possibility was even greater. Second, the commercial companies that were the only suppliers of water to a region generally had only one group of buyers. This led to the possibility of a bilateral monopoly, where irrigation companies and farmers bargained over the price of water. Just as the companies could attempt to appropriate rents to the land by raising water prices, farmers could band together and attempt to expropriate rents to capital by forcing water prices down. Third, in order to effectively execute monopoly power, water companies must have withheld their product from the market, requiring the construction of large storage works. They may have been able to hold back enough water to keep prices up temporarily, but eventually the water would have to be released even from the largest storage facilities. When this happened, the courts held that the water was free to be claimed by others. Therefore, the possibility of increasing prices by restricting output was unlikely.

Another argument for nonmarket alternatives to water allocation was that capital markets were insufficiently developed to provide the necessary investment funds for large projects. Alfred Golzé (1961) stated that "while private enterprise had managed to bring under successful irrigation an impressive and substantial acreage of land, a point had been reached where further development would need stronger support by the Federal and state governments" (p. 12). The water reformers recognized that capital markets had mustered significant funds to build irrigation projects, but their visions included such large-scale reclamation that no one could imagine private capital that would be sufficient. In 1902, it was probably hard to envision a world capital market as extensive as that which exists today, but such a market did develop and does provide funds that can undertake many reclamation projects. Furthermore, the visions of the early

[11]Quoted in ibid., p. 129.

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reclamation supporters included many projects that simply could not pass the benefit-cost scrutiny of markets. These projects would not have been profitable for private enterprise, and they were not profitable for the public either.

The final argument for governmental intervention was that the physical nature of water produced many third party effects, or externalities. If one party polluted a stream, the pollution moved downstream to affect other users. If one pumper took water from a common groundwater source, his actions could affect the pumping costs of others. These examples were used to justify public regulation of water rights.

In some cases, the concern for externalities was warranted. Among economists, the externality argument is one of the more powerful for nonmarket alternatives. The fact is, however, that the evolving system of private water rights was solving many of the externality problems. In the case of pollution from mining operations, McCurdy (1976) found that the courts "issued injunctions when debris buried the claims of miners below, destroyed the growing crops of preemption claimants, filled irrigation ditches and poisoned their fruit trees, or split the hoses of hydrolic miners downstream" (p. 262). In a California case in which a miner was held liable for damages when debris washed away the ditch of another appropriator, Judge Stephen Field stated that "no system of law with which we are acquainted tolerates the use of one's property in that way so as to destroy the property of another."[12] Externalities do present real problems for markets. They are not, however, a sufficient justification for nonmarket controls and are overused as an argument for government intervention in water markets.

The rent seekers who used the coercive powers of government to obtain control of water rights or subsidies for irrigation projects couched their arguments in the above terms. Backed by such public reclamation entrepreneurs as Powell, Davis, and Mead, politicians saw an opportunity to provide their constituents with rents created by restricting entry or by subsidies paid for by others. These people claimed that:

> federal control would promote "scientific" management of land and water resources, simultaneously "conserving" and "developing" them; prevent the monopolization of water by corporations and "speculators"; streamline the system for establishing and enforcing water rights; and encourage the development of rural democracy by war veterans and other deserving pioneers. These policies received

[12]*Jennison* v. *Kirk*, 98 U.S. 453, 461 (1878).

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> the strong backing of at least three presidents, including the two Roosevelts and Herbert Hoover. (Cuzán, pp. 16–17)

Their arguments were extremely successful.

Limits on the Doctrine of Appropriations

We have already seen how the spontaneous order of the American West was evolving into an effective system of water rights. Provisions were made for definition and enforcement, and rights were transferable. There were all of the necessary ingredients for an effective water market for allocating the scarce resource.

While the California court, under the direction of Stephen Field, recognized the potential for "using the organized power of the community to divest the equitably acquired claims of men who had evinced a growth inducing 'incentive to improvement' " (McCurdy 1976, p. 265), the late 19th century saw inefficient restrictions placed on the doctrine of appropriations. A law review article published in 1929, "From Prior Appropriation to Economic Distribution of Water by the State Via Irrigation Administration," captures the essence of the transformation. Some state laws were recognizing prior rights, but other state constitutions and statutes throughout the West were essentially establishing the public ownership of water. Recall that appropriators received only a usufructury right (a right to use the water), not an actual ownership right. The *corpus* of water was declared to be state property. This distinction was in sharp contrast to land laws and set up an immediate tension between use and ownership. As long as water was publicly owned, it was easy for groups who saw a potential to gain from regulation of use to do so.

As population and demands for water in the West grew, so did the number of disputes over ownership. When water was abundant, it did not pay to get involved in the disputes; but as the value of water rose, so did ownership disputes. From the outset of the doctrine of appropriations, courts were involved in settling conflicting claims, the cost being borne by those involved. But some found it in their interest to have states subsidize this process. In Colorado in 1874, for example, irrigators "met in convention to demand legislation for public determination and establishment of rights of appropriation, and then state superintended distribution of water in accordance with the thus settled titles" (Lasky 1929, p. 173). The transformation from prior appropriation to administrative law eventually brought with it, according to Cuzán:

> requirements for the filing of new claims, first at the county, then the state level; the limitations on the the size of "excessive" claims and legal specifications on the duty of water; attachment of water

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> rights to specific land tracts; the disallowing of ownership to water by canal companies which did not irrigate lands of their own; regulation of canal company rates by states and counties; state encouragement to the formation of irrigation districts with the power to tax, condemn property and sell bonds to finance construction of irrigation works and buy out water companies; legislative determination of what constitutes "beneficial use" along with the ranking of uses by classes; prohibition on sale of water rights beyond state or irrigation district boundaries; administrative allocation of water during periods of "drought"; and the establishment of the centralized bureaucracy headed by a state engineer or water commissioner to administer policies and judicial decrees and, in some states, undertake irrigation projects. (p. 13)

Another cause of the erosion of the doctrine of prior appropriations was the inability of judges to forget the common law precedent of riparian rights. Recall that riparian rights grant that

> every owner of land through which a natural stream of water flows, has a usufruct in the stream, as it passes along, and has an equal right with those above and below him to the natural flow of the water in its accustomed channel, without unreasonable detention or diminution in quantity or quality, and to the reasonable use of the stream for every beneficial purpose to which it can be applied, and none can make any use of it prejudicial to the other owners, unless he has acquired a right to do so by license, grant or prescription.[13]

Several elements of the riparian doctrine led directly to more public control of water allocation. First, riparian ownership meant that the resource was held in common and required regulations on open access. Second, since uses that were prejudicial to other owners required "license, grant or prescription," users naturally sought and obtained these special preferences through legislation.

The courts received from the miners a fairly well-settled doctrine for defining, enforcing, and transferring rights; but as disputes came before the courts, riparian arguments were continually introduced. As early as 1853, for example, the California Supreme Court argued that "the owner of land through which a stream flows, merely transmits the water over its surface, having the right to its reasonable use during its passage. The right is not in the corpus of the water, and only continues with its possession."[14] Even though the ruling in *Eddy* v. *Simpson* was subsequently overturned, it did provide riparian precedent in California. Courts continued to state that rights were only usufructury and that they were lost once the water left the

[13]Quoted in Clayberg (1902, p. 91).

[14]*Eddy* v. *Simpson*, 3 Cal 249, 252.

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possession of its appropriator. John B. Clayberg (1902) saw that riparian principles were not being ignored in the evolution of the doctrine of appropriations:

> There never seemed any doubt in the mind of the court about the true position to be taken, but it is almost amusing to read their statements as to whether the principle announced was in consonance with the common law, or departure from it, because of the conditions and necessities of the case. In one case the court would say that they did not depart from the common law but found principles there insufficient to sustain their holdings. In another, the doctrine would be announced that the common law was inapplicable, and that the reasons of that law did not exist in California. (pp. 97–98)

The inability of lawyers and judges to forget common law precedent and the mixture of riparian with prior appropriation doctrine led to confusion, stifling the effective establishment of private property and water. Without private property, the confusion could only be resolved through legislation and administration.

The doctrine that evolved through the spontaneous order and decentralized actions of miners and irrigators was slowly degenerating to the status of permits and licenses controlled by state officials. As early as 1929, Moses Lasky had declared that the principle of appropriation had reached its zenith. He argued that the changes were mostly coming from Wyoming and Colorado and that these changes were *away* "from various forms of extreme individualism and vested property rights of substance in water to . . . the economic distribution of state-owned water by a state administrative machinery through state-oriented conditional privileges of user" (p. 162).

If the introduction of riparian elements into the appropriation doctrine was not enough, the commerce clause of the Constitution also served to increase governmental regulation of water rights. Under the auspices of the commerce clause, the federal government chose to regulate all navigable waterways and their tributaries. This included restrictions preventing private parties from developing reservoirs, sites, or rivers. Navigable waterways were defined in terms of their ability to float logs. Since the commerce clause had been interpreted in ways that gave the government power to regulate interstate commerce, the federal government used it to restrict water development on the grounds that it might impede navigation. With navigation defined in terms of the stream's ability to float logs, almost no streams were exempt from regulation. Hence, the navigation doctrine provided a broad means for federal control. Charles E. Corker has noted the broad implications of this power:

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> . . . the Congress and the courts have been content to treat the word "navigation" as an open sesame to constitutionality. So long as Congress uses the word in statute and the case relates to something moist, the Court takes at face value the declaration that the legislation is in furtherance of navigation. Moreover, the test of what constitutes a navigable stream has been stretched to embrace most of the waters of the United States. . . . (1957, pp. 616–17)

To this day, the navigation doctrine muddles water rights and continues to interfere with a system of well-established property rights in water. In Montana, for example, a group trying to secure public access to the Deerborn River contends that a rancher cannot prevent access because the stream is navigable. Even though the stream has not been used in recent years for floating logs, the issue centers on whether it was used for this purpose in the late 1800s.

By using legislative and administrative rules, individuals have been able to limit water rights in order to capture rents. For example, junior users have engaged in rent seeking by arguing that the doctrine of prior appropriations is "unfair." With this argument, those users persuaded some state legislatures to substitute a different system of priorities than that provided in "first in time, first in right." First preference is usually given to domestic and agricultural uses, with commercial and industrial uses having a lower priority. Thus, even if the latter users purchase early water rights, those rights may be superseded. Similarly, legislation requiring forfeiture of rights for non-users has created the "use it or lose it" principle. While such laws were passed in an effort to prevent "waste," in fact they have created waste. Perhaps the most obvious example of rent seeking exists in those states where allocative decisions are placed in the hands of the judiciary, resulting in expenditures of resources by both losers and gainers from reallocation of water in the form of legal services to influence the judge's decision.

The final example of the results of rent seeking is the restriction on the transferability of water rights. Frank Trelease (1957) argues that the reason for such restrictions was that "many early adjudications gave the irrigators far more water than they really needed, so that the appropriator not infrequently sold his unused water to which he really had no right."[15] Through restrictions on transferability, therefore, some water users were able to gain by obtaining those "excessive" water rights. Hirshleifer et al. (1960) note "that an attempt to correct past mistakes in vesting property rights by simple deprivation or confiscation may have only distributional effects (except

[15]Quoted in Hirshleifer et al. (1960, p. 235).

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insofar as insecurity of rights affects incentive of others) but freezing the right to the original use of water has an adverse efficiency effect from which the community as a whole loses" (p. 240). In Montana, the state constitution prohibits the transfer and sale of water for the purpose of coal slurry pipelines. This effectively prevents coal slurry users from competing with other water users to satisfy consumer preferences. As a result, the price of water is kept artificially low, providing a gain to some users at the expense of others.

The "lawless West" produced the foundation for an effective system of water rights, but legal restrictions have essentially broken down that foundation. As Cuzán notes:

> It is evident that the long-term trend of federal policy has been to mobilize financial, administrative, political, constitutional and judicial resources ... to gain ... control of western waters.... The appropriation doctrine has been undermined, water rights have been virtually expropriated and converted into licenses or permits, and control over Western waters has been centralized in state and federal governments. (pp. 20–21)

Instead of relying on markets, we have turned water allocation over to bureaucrats who have created a rent-seeking process that uses valuable resources without guaranteeing efficiency *or* equity. If we are to avoid a water crisis through a market solution, we must return to the original principles of the appropriation doctrine.

Reclaiming the West with Public Funds

Just as limits on the appropriation doctrine hinder water markets, public reclamation replaced much private enterprise and created a bureaucratic pork barrel that continues to thrive even when other public funds are cut. What was the rationale for public investment in reclamation, and what are its consequences?

As noted above, concern over private monopoly and imperfect capital markets led to the public control of and investment in irrigation projects. In his *Report on the Lands of the Arrid Region* in 1878, Major Powell expressed concern that water rights would be "gradually absorbed by a few. Monopolies of water will be secured, and the whole agriculture of the country will be tributary thereto—a condition of affairs which an American citizen having in view the interest of the largest number of people cannot contemplate with favor" (1878, p. 43). Coupled with the argument that markets are not efficient enough to provide sufficient funds for reclamation projects, this concern led bureaucratic entrepreneurs to seek public funds for their large-scale plans to reclaim the American West.

Two pieces of legislation provided the cornerstones for govern-

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mental involvement in reclamation. First, the Wright Act was passed in California in 1887, providing the statutory emphasis for public ownership of irrigation facilities. It also established a procedure for petitioning for and voting on the question of public control of irrigation. If half of the landowners holding 50 percent of the affected land petitioned for a public irrigation district, county commissioners were directed to call a special election in which a two-thirds majority was necessary to support the petition. Once established, the irrigation district's board of directors had the power to incur financial obligations, impose property taxes, and establish water prices. While these policies had to be approved by a simple majority of the voters, they provided a way for collective action to influence the distribution of benefits and costs of irrigation projects. Other Western states adopted similar legislation during the next few decades, and the door was open for rent seeking through irrigation districts.

Public irrigation districts provided an opportunity for rent seeking in two ways. First, unlike private, mutual companies, public irrigation districts could use property taxes to finance projects, creating the potential for income redistribution. Second, because the legislation did not make the board of directors or the individual water users residual claimants, the incentive for efficient pricing was greatly reduced. Irrigators who could keep the price of water below its opportunity cost received a rent or subsidy paid for through water district taxes.

While there is a lag between legislation enabling the formation of public irrigation districts and their growth, the rent seeking that resulted from such legislation cannot be disputed. Between 1920 and 1950, public irrigation districts in California grew from 577,000 to 1,821,000 irrigated acres. During this same time, mutual irrigation companies and commercial enterprises were declining (Smith, p. 9). Figure 1 shows that the peak of district organization occurred in the 1920s, while gross acreages of active districts remained approximately constant until 1910, grew dramatically until 1925, and stabilized thereafter.

Rodney Smith's empirical analysis of the choice between private and public irrigation ownership in California supports the hypothesis that public districts provided a means for obtaining rents. Mutual water companies charged direct prices for their water while public irrigation districts collected taxes, forming an implicit price. In the former, when individual water use increases, payments to the company increase. In the latter case, however, an increase in an individual's water use influences not only the farmer's own property tax liabilities but also those of all other landowners in the district. There-

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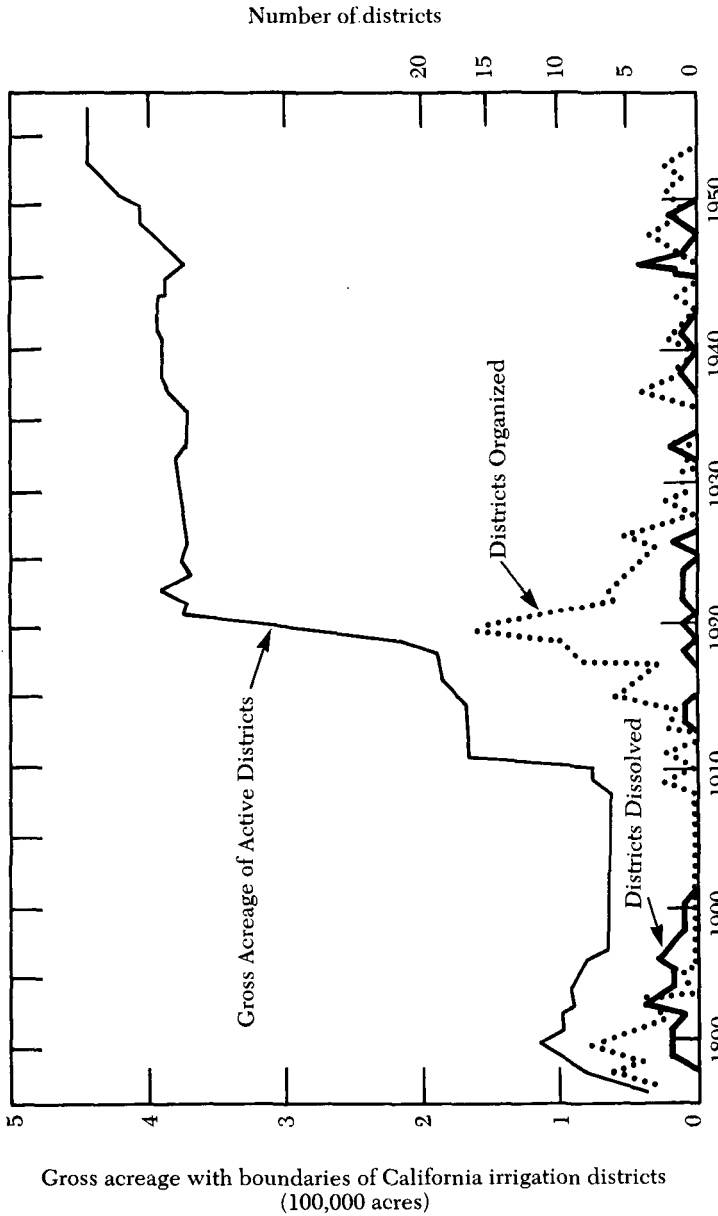
FIGURE 1
CALIFORNIA IRRIGATION DISTRICTS ORGANIZED AND DISSOLVED AND GROSS DISTRICT ACREAGE, 1887–1956



SOURCE: Brewer (1961), Figure V.

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fore, the farmer in the district receives a direct benefit, and the costs are diffused over the district population. Smith's analysis shows that water demand in mutual water companies is much more responsive to direct charges than water demand in public irrigation districts is to indirect taxes (pp. 42–48). Pricing via taxes allows individuals to use public irrigation districts to redistribute income. Furthermore, it promotes inefficient water use by allowing the irrigator to face prices that do not reflect full costs.

While the formation of public irrigation districts provided a local mechanism for subsidizing water projects, the Newlands Reclamation Act of 1902 produced further subsidies through the federal government's massive water projects in the West. Initially, reclamation projects were to be funded from the proceeds from the sale of public lands. Costs were to be repaid within 10 years, though no interest charges were to be levied; and each Western state was to receive reclamation revenues according to its proportional contribution to public land sales. By limiting water delivery to farms no larger than 160 acres, the Act was to promote Jeffersonian democracy. Rights to the water delivered to the small farms were to be made appurtenant to the land.

These initial provisions were relatively harmless in terms of water subsidization. The program was to pay for itself, but some were skeptical about the Act from the beginning. A New York congressman estimated that the plan would ultimately cost the country billions of dollars. Dalzall of Pennsylvania believed it would "unlock doors of the treasury." Cannon of Illinois dubbed the bill a "direct grant in an indirect way." Payne of New York was of a like mind, while Hepburn of Iowa insisted "that this is a thinly veneered and thinly disguised attempt to make the government, from its general fund, pay for this great work—great in extent, great in expenditure, but not great in results. . ." (Hibbard, 1965, p. 442).

In retrospect, the critics were correct. The Reclamation Act has allowed irrigators and agents of the bureaucracy to engage in rent seeking. The projects allowed interest-free loans for construction costs with flexible repayment schemes. By altering the terms of repayment, the Bureau of Reclamation was able to expand and irrigators were able to receive larger subsidies. The Reclamation Act also promoted rent seeking by setting the 160-acre limit. Since enforcement of this restriction determined the distribution of benefits from federal irrigation programs, irrigators have attempted to alter the enforcement.

Though the initial legislation provided for 10-year, interest-free loans, the value of this subsidy to irrigators was increased signifi-

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cantly through extensions of the repayment period, allowances for periods of no repayment, and combinations of irrigation and power projects that allowed revenues from hydroelectric power to repay irrigation costs exceeding the irrigators' "ability to pay." Table 3 shows the proportion of costs that are subsidized, depending on the interest rate and the repayment terms. It is clear that higher interest rates, longer repayment schedules, and grace periods increased the value of the subsidy. Because many Bureau of Reclamation projects were not economically sound, default was common. When loans could not be repaid, farmers and bureaucrats argued for extensions, the graduation of payments, and the postponement of the first payment. The Omnibus Adjustment Act of 1926 extended prepayment of contracts to 40 years and graduated the repayment schedule. When low agricultural prices between 1926 and 1930 made it difficult for farmers to meet their reclamation payments, Congress granted a moratorium on all payments from 1931 to 1936.

TABLE 3

THE INTEREST SUBSIDY

Payment Plan	Subsidized Proportion of Costs (Percent)		
	Discount Rate		
	3%	6%	10%
10 yr. repayment period; equal installments	14.7%	26.4%	38.6%
20 yr. repayment period; equal installments	25.5%	42.5%	57.5%
20 yr. repayment period; graduated installments[1]	28.9%	47.8%	64.0%
20 yr. repayment period; graduated installments with grace period and down payment[2]	30.7%	50.3%	66.7%
40 yr. repayment period; equal installments	42.3%	62.5%	75.5%
40 yr. repayment period; equal installments with 10 yr. grace period	57.0%	79.0%	91.0%

[1]Repayment schedule (outlined in the Act of August 13, 1914) was 2% of construction costs for first four years, 4% for next two years, and 6% for final 14 years.

[2]Repayment schedule (outlined in the Act of August 13, 1914) was 5% of construction cost down, followed by a five-year development period, then annual payments of 5% for five years and 7% for the final 10 years.

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The Reclamation Project Act of 1939 empowered the Bureau to enter into more flexible repayment contracts. "Contracts negotiated under section 9(d) of this Act were permitted to have repayment periods of 40 years with development periods of up to 10 years. The contracts could be written to allow for charges that varied with productivity of different classes of land within the project area and for annual changes that depended on gross crop values" (Rucker and Fishback, p. 13). In addition to providing irrigators with larger subsidies, the ability to lengthen the repayment period gave the Bureau of Reclamation longer administrative control over projects, since that control was not relinquished until a certain percentage of construction costs was paid.

In the 1920s, the Department of Agriculture opposed Bureau of Reclamation irrigation projects on the grounds that they were aggravating the oversupply of farm products. To combat this attack, the Bureau diversified by engaging in multiple purpose projects, building Hoover and Grand Coulee dams, for example, to provide hydroelectric power, municipal water, flood control, improved river navigation, and irrigation. In addition to giving the Bureau support from other constituencies, this diversification enabled further subsidization of irrigation water. Table 4 shows the percentage of irrigation costs subsidized by power production for selected projects. When these subsidies are combined with those discussed earlier, subsidies to irrigation can run as high as 90 percent.

Summary

When the court cases that served to erode the basis of the doctrine of appropriations are combined with public reclamation efforts, there is little room for market allocation of water. In most Western states, water is the declared property of the state, the people, the public. Only in Colorado and New Mexico is this declaration limited to unappropriated water. Writing 20 years ago, Hirshleifer et al. concluded that:

> the current trend, in sum, runs strongly against the development of a system of water law based on individual choice and a market mechanism. . . . [W]e think that the evidence is fairly clear that the tenor of the legislative and judicial edicts we have reviewed is the product of the ignorance of even importantly placed and generally well-informed individuals today about the functioning of economic systems—and, in particular, it is the product of the common though incorrect opinion that the public interest can be served only by political as opposed to market allocation processes. . . . That there are defects in the present systems of private water rights is very clear; but to abolish property rights rather than cure the defects is a drastic and, we believe, unwise remedy. (1960, p. 249)

With few exceptions, the legislative and judicial actions have contin-

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TABLE 4

THE POWER SUBSIDY[1]

Project	Costs Allocated to Irrigation	Costs to be Pre-paid by Irrigators	% of Irrigation Costs Subsidized
Central Valley California	682,152,000	606,646,000	11.1%
Chief Joseph Dam[2] Washington	11,083,200	6,050,000	45.4%
Collbran Colorado	6,105,000	1,089,101	82.2%
Columbia Basin Washington	745,111,398	135,916,400	81.8%
Dixie Utah			
Fryingpan–Arkansas Colorado	69,946,000	50,512,300	27.8%
Rouge River Oregon	18,064,000	9,066,500	49.8%
San Angelo Texas	8,853,904	4,000,000	54.8%
The Dalles Oregon	5,994,000	2,550,000	57.5%
Venturia River California	18,273,128	10,746,300	41.2%
Washita Basin Oklahoma[3]	10,403,011	8,221,000	21.0%

[1]On some of these projects, a portion of the subsidy to irrigators came from industrial and municipal users. Source: Reclamation Payments and Payout Schedule, Department of the Interior, Bureau of Reclamation, U.S. Government Printing Office, 1965.

[2]Includes costs and repayments from Foster Creek and Greater Wenatchee Divisions.

[3]Includes costs and payments from Fort Cobb and Fass Divisions.

ued to erode the basis of private property rights in water. Moses Lasky's concern in 1929 about the shift from prior appropriation to economic distribution of water by the state was certainly prophetic.

The large-scale federal involvement in reclamation also contributed to the demise of water markets and the promotion of inefficiency. Without the proper information and incentives, alternatives to large-scale reclamation have not been considered carefully. Rudolph Ulrich estimated that the costs of bringing desert land into agricultural production were 5 to 14 times greater than the costs of clearing, fertilizing, and irrigating lands in the humid Southeast. In 1924, Benjamin Hibbard concluded:

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> In passing the Reclamation Act in 1902 as a nation we clearly forgot those things which were behind, the millions of unoccupied acres of the Mississippi Valley, consisting mostly of fertile, well-watered land needing only to be drained or cleared. Had we really been concerned over the future food supply as we pretended to be, or being so concerned, had we calmly asked how to increase it in the cheapest and easiest manner, certain of the reclamation projects would still be undeveloped. . . . (1965, p. 449)

Reclamation was able to make the desert bloom, but there is little economic justification for the blossoms.

Some Suggestions for Reform

It has been argued that the foundation for a market solution for water allocation was laid during the last half of the 19th century and that the foundation has been eroding ever since. The appropriation doctrine allows for the definition and enforcement of water rights, which are necessary conditions for market transfers. Administrative and judicial decisions, however, have weakened private property rights in water and restricted transfers that are essential for efficient allocation. Combining these impediments to the market with governmental subsidization of water supplies is producing what U.S. Secretary of the Interior James Watt has called "the most serious domestic crisis of the next decade."[16]

Secretary Watt contends that the crisis exists because the nation lacks the billions of dollars needed to solve water problems: "Frankly, we do not have the economic strength to do what needs to be done." Such a perspective differs little from that of any other administration since the Reclamation Act was passed in 1902. While the Reagan administration has called for reclamation reform by making water users pay for the projects, the basic mentality is still one of pouring billions of dollars down the drain. While such solutions are consistent with economic models of bureaucracy, they are not consistent with the espoused free-market orientation of the current administration. Furthermore, it is unlikely that more dollars for water delivery and reclamation systems will do much good. The perverse incentives and information under the current institutional framework will always enable demand to outstrip supply.

A real solution to the water crisis must encompass reform of the property rights structure. The new resource economics is focusing attention on these reforms and is producing suggestions that, if adopted,

[16]"Watt Forecasts Water Woes to Stir U.S. Crisis," *Denver Post*, August 13, 1982.

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would move us toward a real solution to the water crisis. Three proposals are suggestive of what might be done.

1. *Surface water rights.* Simply eliminating the many restrictions on water transfers would take us a long way toward solving the water crisis. Currently, rights are to divert water for a specific use; hence, courts have imposed limitations on transfers when the use changes. Limits are also placed on transfers between basins and states. By eliminating these restrictions, the market could determine beneficial use and eliminate the need for costly administrative rulings.

The main argument posed by economists against allowing unrestricted transfers is that return flows produce third party effects. Space does not permit developing this argument, but it is easy to see that the transfer of water from one use to another could dramatically alter the return flow. Johnson et al. and Tregarthen have argued that the New Mexico system that specifies consumptive rights rather than diversion rights eliminates this problem. While there will be transaction costs involved in specifying consumptive rights, they do not appear to be prohibitive for most situations. Such a specification could greatly reduce third-party effects and improve the efficiency of market allocation.[17]

2. *In-stream water use.* With the growing demand for recreational water use comes increased pressure to leave water in the stream. Diversion for consumptive use often harms fish habitat, reduces possibilities for water reclamation, and reduces asthetic value. It is generally assumed that this problem cannot be handled by markets and, therefore, that administrative agencies must regulate diversion. Idaho sets stream flows by legislation; Washington sets them by bureaucratic expertise; and Montana reserves water rights to maintain instream flows. In Colorado, the Water Conservation Board can acquire unappropriated rights, but it also has the power to purchase existing rights. While this solution comes closer to a market alternative, the most frequently used methods pit consumptive users against in-stream users, resulting in a zero-sum game.

One reason that states are so heavily involved in determining in-stream flows is that most states prohibit the ownership of water for in-stream purposes. Since use is generally taken to mean consumptive use, leaving water within the confines of the stream's banks is not, in the eyes of the law, a beneficial use. The Colorado Supreme Court's finding that there is "no support in the law of this state for the proposition that a minimum flow of water may be 'appropriated' in a natural stream for piscatorial purposes without diversion of any

[17]For a more complete discussion, see Johnson and Gisser (forthcoming).

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portion of the water 'appropriated' from the natural course of the stream" indicates the nature of the problem. By allowing such ownership, states could provide an incentive for environmental, fish and wildlife, and conservation groups to purchase existing water rights for in-stream uses. Such property rights exist in England and perform well.[18]

3. *Groundwater rights.* Agricultural, municipal, and industrial users are increasingly turning to groundwater as their source of supply. The nation's aquifers contain billions of gallons of water, some of which has been stored for thousands of years. By mining these aquifers, users are able to get relatively cheap water that is available with considerably more certainty than surface water. In many cases, the aquifers have not been adjudicated, so no rights have been assigned. The classic common pool problem often results, and the call goes out for governmental allocation.

An alternative, however, is to assign rights to both the stocks and the flows in the basin. Allowing individuals to own stocks assures them of being able to capture water in the future and gives them some incentive to "bank" water. Assigning rights to the natural recharge enables users to choose between consuming and banking the flow. While this does not eliminate all externality problems, it does turn most allocative decisions over to the market process. Assigning the rights does require substantial hydrological data, but they are becoming increasingly available. Evidence from the Tehachapi Basin in California suggests that this method does have potential.[19]

Getting from here to there in institutional reform presents the real problem. Calling for politicians living in a rent-seeking society to decentralize water decisions offers little hope for reform. Nonetheless, this decentralization is necessary for a market solution to the water crisis. From the American West came water rights that evolved through a spontaneous order, a result that is likely only when authority is decentralized. Hirshleifer et al. capture the importance of decentralization:

> Other things being equal, we prefer local to state authority, state to federal—and private decision-making (the extreme of decentralization) to any of these. Our fundamental reason for this preference is the belief that the case of human liberty is best served by a minimum of government compulsion and that, if compulsion is necessary, local and decentralized authority is more acceptable than dictation from a remote centralized source of power. This is an

[18]For a more complete discussion, see Huffman (forthcoming).

[19]For a more complete discussion, see Smith and Anderson, Burt, and Fractor (forthcoming).

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> "extra market value" for which we at least would be willing to make some sacrifices in terms of loss of economic efficiency. . . . Even on grounds of efficiency, however, we have some faith that the more nearly the costs and benefits of water projects are brought home to those who make the decisions, the more correct those decisions are likely to be—a consideration which argues for decentralization in practice. (1960, pp. 361–62)

Until their conclusion is recognized, accepted, and implemented, there is little hope of solving the water crisis. Furthermore, without returning to a system of private appropriations, individual liberty will continue to be eroded.

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DEVELOPING THE MINERAL RESOURCES OF THE SEABED

Doug Bandow

The world's oceans have played a vital role in the development of virtually every nation. They provide the transportation network that binds us together through trade; they yield much of the food that feeds us; and they act as laboratories for scientific research. They also contain the natural resources that can help sustain and encourage economic development in the United States and throughout the rest of the world. Unfortunately, the development of the mineral resources of the seabed is considered more problematical today than was thought to be the case even two years ago. If we cannot surmount the technical, economic, and legal barriers to the development of these resources, we will have lost an important opportunity to enhance the economic well-being of people all over the world.

The Wealth of the Seabed

The oceans contain vast amounts of mineral resources. As much as 40 percent of the world's recoverable oil resources may lie offshore. Based on potential recoverable reserves of 1,000 to 5,000 billion barrels, there is likely 400 to 600 billion barrels of oil offshore, and possibly as much as two trillion. Economist James Johnston estimates that 80 percent or more of these reserves are within 200 miles of shore (the evolving boundary between coastal state and international jurisdiction over economic resources). Economists David B. Johnson and Dennis E. Logue are more pessimistic, projecting recoverable

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reserves of 340 billion barrels.[1] This still leaves a substantial portion of the resources, up to 20 percent, in the seabed beyond, though at least one expert doubts that these reserves will become commercially recoverable.[2] In any event, the value of the ocean deposits of oil is immense, and would be worth between $14 and $70 trillion, at a price of $35 per barrel.

There also are significant reserves of gas and natural gas liquids. Johnson and Logue have estimated that close to 2000 trillion cubic feet of natural gas (equivalent to 296 billion barrels of oil) and roughly 52 billion barrels of natural gas liquids (equivalent to 36 billion barrels of oil) lie within roughly 200 miles of the United States.[3] Additional reserves undoubtedly also lie beyond the 200 mile mark, but estimates have not been made.

The ocean's hard mineral resources may rival the energy deposits in value. According to the U.S. Geological Survey, the floor of America's continental shelf contains more than one trillion cubic meters of sand and gravel, 155 billion cubic meters of shell and carbonate sand, three and a half billion metric tons of heavy-metal sand, a similar amount of phosporite, 70,000 kilograms of precious coral, and 17 trillion metric tons of rock salt.[4] These regions also contain varying amounts of titanium, gold, platinum, zircon, and other heavy metals, as do the coastal areas of other nations.[5]

Significant mineral deposits also lie on the ocean basin—the deep seabed—the most important of which are manganese nodules. Scientists and observers have estimated that the Pacific Ocean has the richest deposits, containing one to one and a half trillion tons, making

[1]James Johnston, "Petroleum Revenue Sharing from Seabeds Beyond 200 Miles Offshore," *Marine Technology Society Journal* 14 (1980): 28–30; David Johnson and Dennis Logue, "Economic Interests in Law of the Sea Issues," in Amacher and Sweeney, eds., *The Law of the Sea: U.S. Interests and Alternatives* (Washington, D.C.: American Enterprise Institute, 1976), p. 59. They believe that changes in U.S. Geological Survey projections make their estimates optimistic (p. 57). But if petroleum prices increase in the future, more deposits of oil that are now uneconomical to develop will become recoverable, increasing estimates of proved reserves. Ross Eckert, *The Enclosure of Ocean Resources* (Stanford, Calif.: Hoover Institution Press, 1979), pp. 91–92. The amount of likely resources yet to be discovered or now discovered, but not yet economically recoverable, is significant (p. 94).

[2]Fred Singer, "The Great UN Snorkel," *The American Spectator*, May 1981, p. 24.

[3]Johnson and Logue, pp. 57, 59.

[4]Department of the Interior (DOI), "Program Feasibility Document OCS Hard Minerals Leasing," August 1979, at Table 1. Some people believe the phosphorite deposits could be even larger. Paul Fye, et.al., "Ocean Science and Marine Resources," in *Uses of the Seas* (Englewood Cliffs, N.J., Prentice-Hall, Inc., 1968), p. 34.

[5]DOI, p. 5; Fye, et.al., p. 32; Peter Rona, "Marine Mineral Resources," *Natural Resources Forum* 5 (January 1981): 89–90.

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this perhaps the largest mineral deposit on earth.[6] Nodules also are found on the seabed of the Atlantic and Indian oceans, and an estimated 250 million metric tons of them are on America's Outer Continental Shelf.[7]

The nodules are rounded masses of manganese oxide which form through chemical precipitates from the ocean, accreting around objects such as bones, stones, or teeth. The nodules vary greatly in size, from grains of sand to large boulders.[8] They consist mainly of manganese and iron, with important concentrations of nickel, cobalt, and copper, as well as small traces of up to 74 other metals, most of which are not economical to extract.[9] The metallic concentrations of the nodules varies by geographic location, and within particular deposits.[10]

Recently, other deep seabed deposits have been discovered. Polymetallic sulfides have been found in the East Pacific, along the Juan de Fuca Ridge, on the Galapagos Rift off Ecuador, in the Guayamas Basin in the Gulf of California, and even in the Red Sea. The minerals collect near volcanic hot springs, and contain copper, zinc, and silver in addition to sulfur.[11] In September, National Oceanic and Atmospheric Administration (NOAA) researchers found deposits some 1800 miles east of Miami; similar deposits were found by U.S. Geological Survey scientists last year roughly 250 miles off the Pacific Coast.[12] Scientists believe that similar deposits probably exist in unexplored portions of mid-ocean ridges and, more importantly, in U.S. waters.[13] According to Alex Malahoff, chief scientist of the National

[6]Eckert, p. 215; William Hawkins, "Reaffirming Freedom of the Seas," *The Freeman,* March 1982, p. 182.

[7]Eckert, p. 217; Hawkins, p. 182; DOI.

[8]Johnson and Logue, p. 39; Fye, et.al., p. 36; Eckert, p. 215.

[9]Tom Kizzia, "Deep Sea Billions," *Washington Post Magazine,* August 2, 1981, p. 24.

[10]Eckert, p. 219.

[11]Memorandum from Daniel N. Miller, Jr., assistant secretary for Energy and Minerals, Department of the Interior, to Ambassador James L. Malone, Department of State, October 15, 1981; Rona, pp. 93–94; "Polymetallic Sulphides: More Riches from the Sea?," U.N. Doc. DESI FACTS 82/2 (March 1982). The deposits off Ecuador are worth some $2 billion alone. "Massive Deposit of Copper, Other Ores Found in Ocean," *Baltimore Sun,* October 9, 1981. A more detailed discussion of these metals is available in Congressional Research Service (CRS), "Report of Marine Hydrothermal Metal Deposits," Committee Print Serial No. 97-d (July 1, 1982), pp. 1–49 and Peter Rona, "Criteria for Recognition of Hydrothermal Mineral Deposits in Oceanic Crust," *Economic Geology* 73 (March-April 1978): 135–160.

[12]"U.S. Team Uncovers Rich Manganese Deposit, *New York Times,* September 23, 1982, p. A23; "Confirm Rich Metal Deposits Near Newly Discovered Submarine Hot Springs," Press Release, U.S. Geological Survey, Department of the Interior, September 17, 1981.

[13]Miller memorandum, p. 2; Press Release, U.S. Geological Survey; "Massive Deposit of Copper, Other Ores"; "Polymetallic Sulphides: More Riches."

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Ocean Survey, these discoveries "could mark a new and dramatic turnaround in the assessment of the volume of accessible world-wide deposits of strategic minerals."[14]

Last September cobalt deposits were discovered in the Pacific. According to Dallas L. Peck, director of the U.S. Geological Survey, "similar cobalt-rich crustal deposits may be available at relatively shallow depths in water close to the Hawaiian Islands, the Trust Territory of the Pacific Islands, and other U.S. Pacific territories and possessions."[15] The continuing fast pace of mineral discoveries indicates potentially immense resources at our disposal.

Unfortunately, the value of these significant mineral deposits may remain theoretical for some time. As Peter A. Rona, a senior research geophysicist with NOAA noted: "Only a small fraction of the potential mineral resources of the continental shelf and virtually none of the resources of ocean basins are presently exploited. The reasons for this situation are scientific, technical, economic, and legal."[16]

Barriers to Seabed Development

Scientific and Technical Barriers

The current state of scientific knowledge regarding the process of mineral accretion and concentration does not allow us to accurately predict the full extent of the mineral wealth of the seabed. Scientists are constantly surprised at the vast amounts of new seabed resources that are being discovered. For example, the scientific community was taken by surprise when polymetallic sulfides were discovered in 1979, and when cobalt resources were found only months ago.[17] Even where seabed resources have been thoroughly analyzed, as in the case of petroleum and manganese nodules, there are still major technical barriers to extracting them. The ocean floor is a series of hills and canyons lying 3,000 to 5,000 meters beneath the ocean's surface, and varying in make-up between ooze and a brittle crust. The pressure at such depths is tremendous. This makes the oceans "not only a difficult environment in which to work but also an unpredictable one."[18] This unpredictability extends to the ocean's surface, which is subject to constant change.

[14]"Massive Deposit of Copper, Other Ores."

[15]"Cobalt-Rich Seabottom in South Pacific Offers New Mineral Potential," Press Release, U.S. Geological Survey, Department of the Interior, September 21, 1982.

[16]Rona, "Marine Mineral Resources," p. 94.

[17]Miller memorandum.

[18]"Mining Deep Sea-Bed Minerals," U.N. Doc. DPI/DESI NOTE/587 (August 17, 1981), p. 1.

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Despite the difficult environment, technological barriers to seabed development seem to be breaking down. Petroleum exploration and extraction, for example, has steadily advanced, allowing exploitation of deeper and deeper fields. Between 1947 and 1978, offshore drilling platforms went from capacities of 20 feet to 1,000 feet, and significant drilling activity has moved from shallow coastal waters to far more inhospitable climes, such as Alaska and the North Sea.[19] Thus, the Outer Continental Shelf, possessing most of the known oil reserves, is fully within reach of current technology.

The trend toward deeper drilling seems likely to continue, with further technical improvements potentially extending drilling to the deep seabed. Seismic reconnaissance makes exploration cheaper at sea than land, and is accurate up to 5,000 feet. The use of robots, "deep saturation diving," mobile drilling, and underwater wellheads extend the reach of potential development.[20]

The technical problems encountered in the recovery of other minerals vary. Mining minerals on the bed of the continental margin, particularly where the ocean depths are hundreds rather than thousands of feet, is not difficult. Indeed, companies have been mining tin, phosphorite, sand and gravel, and other heavy metals offshore for decades. Offshore sand and gravel mining has proved to be second only to oil and gas in value to the United States; the deposits are thick and abundant, and can be transported to shore by dredge or pipeline. Other minerals mined in coastal areas around the world include titanium sands, zircon and monazite, salt, magnesium, lime mud and shells, pearl, and sulfur.[21]

One mining tool is the "seagoing, self-propelled, trailing suction hydraulic hopper dredge." The dredge collects materials off the seabed, and either transports them to open-water disposal sites, or directly pumps them through a discharge piping system to a shore disposal site. Other systems are theoretically possible, including a continuous-line bucket system.[22]

Developing manganese nodules is difficult. The nodules must be mined, lifted to the surface, transported to shore, and processed. This

[19]Eckert, pp. 94–95; William Pendley, "The U.S. Will Need Seabed Minerals," *Oceanus* 25 (Fall 1982): 13–14. Interestingly, it is also possible to collect natural seepages of oil and gas through fissures in the ocean floor. Drilling is not even required. "Payoff from the Sea Floor," *Time*, October 11, 1982, p. 79.

[20]Edmund Gullion, "Introduction: New Horizons at Sea," in *Uses of the Seas*, p. 2; Johnson and Logue, p. 58; Eckert, p. 94.

[21]Fye, et.al., p. 39; Rona, "Marine Mineral Resources," pp. 89–90.

[22]DOI, appendix 20.

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requires a mining operation quite different from that on land. As economist Ross Eckert has observed:

> The mining of nodules requires the development of entirely new deep-ocean technologies. Efficiencies are uncertain since there is no previous experience with comparable systems. Reliable methods must be developed for a variety of difficult tasks: surveying areas by remote sensors and evaluating samples having high moisture content; collecting deposits from the ocean floor on a continuing basis at depths of up to three miles and lifting them to the surface; developing viewing systems that permit the mining machinery to be observed in operation and reveal any obstacles lying in the paths of dredge sweeps; developing structural materials that are resistant to corrosion and fatigue; eliminating waste materials such as silt and soil from the nodules at sea before ores are transported to shore for processing; and extracting metals without the use of conventional processes.[23]

The actual mining and lifting of the nodules is the most serious barrier, since the transportation and processing steps require nothing extraordinary. Transportation would be by ship. The selection of processing technology is still unresolved. Five different processing techniques are being considered, with two apparently being extensively tested. The technology to be used won't be chosen until some pilot operations are established, specific deposits surveyed, and the metals to be recovered decided upon.[24]

The basic capability of several different collection systems has been demonstrated, and miners theoretically could proceed to develop commercial mining operations. However, a lot of work remains before the skeptics will be satisfied that commercial feasibility on a large scale and a long-term basis have been proven. Some bankers in particular are not yet ready to lend money for nodule mining because of doubts over the collection technology.[25]

There are three distinct systems which may be used to collect and lift nodules to the surface. The first is hydraulic mining, which relies on a mining vehicle connected to a mother ship to operate on the seabed. The bottom miner is the most complex aspect of the system.

[23]Eckert, p. 219. His view of the difficulties is shared by others. Gordon MacDonald, "An American Strategy for the Oceans," in *Uses of the Seas*, p. 170; J.K. Amsbaugh and Jan Van der Voort, "The Ocean Mining Industry: A Benefit for Every Risk?," *Oceanus*, 25 (Fall 1982): 22.

[24]Eckert, p. 225. The cost of recovering four metals is higher than recovering only three; the demand for manganese will determine whether it is worthwhile to extract. Robert Knecht, "Deep Ocean Mining," *Oceanus* 25 (Fall 1982): 5.

[25]General Accounting Office (GAO), "Impediments to U.S. Involvement in Deep Ocean Mining Can Be Overcome," February 3, 1982, p. 32.

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It may be self-propelled (the Ocean Minerals Company has tested one that uses two Archimedes-type cylinders), towed by the lift pipe, or remain stationary with a rotating arm connected to a movable carriage to crush and collect nodules. The moving models require significant additional work for sensing, steering, and monitoring. The self-propelled mode would likely be a more efficient miner, but is more complex; the towed miner requires greater coordination between ship and vehicle. The stationary model is most expensive, and was developed in tandem with the Glomar Explorer in trying to recover a sunken Soviet submarine. But its techniques might be adaptable to one of the mobile units. In either case, the nodules collected would be lifted to the surface through a pipe connected with the mother ship: The nodules could be mixed with water and pumped to the surface or sucked upward in slurry form by the injection of compressed air. Both methods have been tested, and both have various advantages and disadvantages.[26]

A cheaper collection system is the continuous line bucket system, which is essentially a line with dredge buckets attached. The line is rotated, causing a constant stream of buckets to scoop up nodules, carry them to the surface, empty the nodules into a ship, and then return to the seabed. Though AFERNOD, the French consortium, and SEDCO, the Japanese consortium, apparently tested this method successfully, it is very difficult to control the buckets, and to prevent the line from tangling. Few observers expect the system to be commercially feasible: Conrad Welling, manager of ocean mining for Lockheed Missles & Space Co., says the system has had only "very limited success."[27]

The third system is modular mining, which employs a number of free swimming mining units. These units collect minerals from the seabed, transport them to the surface ship and unload their cargo, and return to the seabed. This system has received the least attention, though it is reported that AFERNOD is considering it.[28]

The most experimentation has been with the hydraulic system. The technology itself is fairly well advanced; the next stage is a pilot program, which Lockheed's Welling estimates is a multi-year, two-stage process involving between $350 million and $600 million. Establishing the first commercial deep seabed mining operation

[26]Eckert, pp. 219–224; "Mining Deep Sea-bed Minerals," pp. 2–6; Kizzia, p. 28.

[27]Conrad Welling, "The Massive Technology for Ocean Mining," *Stockton's Port Soundings*, September 1980, p. 9; Knecht, pp. 5–6; Eckert, p. 220; "Sea-Bed Mineral Resource Development: Recent Activities of the International Consortia," U.N. Doc. ST/ESA/107 (1980), p. 9.

[28]"Mining Deep Sea-Bed Minerals," pp. 3–5; Knecht, pp. 5–6.

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probably will require between $1 billion and $1.5 billion to fully develop, purchase, and set up the technology, and annual costs could run as much as $400 million.[29]

The technology necessary for mining other deep seabed minerals such as polymetallic sulfides which lie 8,500 feet below the ocean surface is less advanced. Scientists disagree on the exact state of the technology for mining sulfides. Malahoff of the National Ocean Survey says that most of the technology necessary to mine them already exists, while NOAA's Rona argues that the minerals discovered last September are too deep to be reached by current technology, and are instead a resource for the future.[30] In any case, we can apply the technical knowledge gained from the extensive research on manganese nodule mining to mining sulfides, and this should prove very useful. According to the Congressional Research Service (CRS), "While the mining system would not be identical, other aspects such as ship operating and construction costs, processing and transportation may be comparable [with that of manganese nodule mining]."[31] In fact, the sulfides ultimately should be easier to recover because the minerals are more highly concentrated, closer to shore and not as deeply situated.[32] Cobalt deposits are in a similar situation.

Economic Barriers

Perhaps the most important barrier to mineral development of the seabeds is economic. If seabed mining promises to generate sufficient *capturable* profits, entrepreneurs will have an incentive to undertake the necessary investment. Offshore oil production is a case in point. World offshore production was $10 billion in 1972, and more than $30 billion in 1980.[33] Oil production has continually extended further away from shore as oil prices have risen and the cost of the drilling technology fallen. Thus, the potential of deep-sea oil drilling exists: Its economic viability is dependent on the future movement of energy prices, and on expected after-tax profits.

Companies also have been mining hard-mineral resources up to the continental margin for decades. The world, annual value of hard-

[29]Conrad Welling, "Ocean Mining Systems," *Mining Congress Journal*, September 1976; GAO, p. 30; CRS, pp. 64–65.

[30]"Massive Deposit of Copper, Other Ores"; "U.S. Team Uncovers Rich Manganese Deposit." The same factors would seem to apply to the cobalt deposits. "Cobalt-Rich Seabottom in South Pacific."

[31]CRS, p. 61.

[32]Roger Brooks, "The Law of the Sea Treaty: Can the U.S. Afford to Sign?," Backgrounder, The Heritage Foundation, June 7, 1982, p. 19; CRS, pp. 66–67.

[33]Rona, "Marine Mineral Resources," p. 91.

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mineral production was $1 billion in 1979 and roughly $4 billion in 1980.[34] Most U.S. production is of sand and gravel. However, recent studies commissioned by the U.S. Geological Service have concluded that phosphorite mining off the coasts of Georgia and California is economical, despite past instability in the phosphorite market. Moreover, even metals not currently worth mining, such as gemstones, gold, and platinum, may become profitable as market conditions change and technologies advance.[35]

The economic potential for mining manganese nodules is less clear, since deep seabed mining is significantly different from surface mining. In contrast, the economic potential of offshore oil drilling has been relatively easy to determine because it is simply an extension of existing capabilities. Investors have been moving slowly into deep seabed mining. The tens of millions invested over the past few years is but a small proportion of the total investment necessary to get a minesite into commercial operation. Judgments as to the likely costs, as well as likely mineral prices will determine the future pace of investment.

Most industry analysts agree that initial costs will be substantial—as much as $1.5 billion. These costs could easily rise once practical mining problems are encountered. Among other things, the type and composition of nodules to be collected and the nature of the ocean terrain on which they lie might require specific equipment modifications to fit specific minesites.[36]

The most important minerals contained in the nodules are nickel, copper, cobalt, and manganese. Copper is most widely used, but cobalt is the most expensive and has the most sensitive strategic role: It is produced primarily by one of the world's more unstable countries, Zaire. (The 1978 Angolan invasion caused temporary cobalt price increases of up to 630 percent.)[37] Several other trace metals, such as molybdenum and vanadium, could become by-products rather than waste depending on their market price and the economics of the particular processing technology.[38]

The Interior Department estimates that nickel will contribute about 70 percent of the ocean mining industry's revenues. The demand for nickel is expected to grow only modestly in the years ahead, thus

[34]Ibid.

[35]DOI, pp. 7–8, 24, appendix 2 (p. 5); Rona, "Marine Mineral Resources," p. 89.

[36]Eckert, p. 224.

[37]Eckert, pp. 226–227; C.R. Tinsley, "United States' Interests in the Law of the Sea: Review and Analysis," paper presented to AEI Conference, October 19, 1981.

[38]Welling, "Ocean Mining Systems."

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limiting seabed development. However, increased markets for copper, cobalt, and manganese could influence the ultimate success of the industry by providing a profitable margin.[39]

Because of the great uncertainties surrounding future metals markets, world economic growth, and economic performance of seabed mining, the most honest assessment is probably that of the CRS. "At this point no one really knows whether the initial deep seabed mining ventures will be economically viable."[40] But many observers believe that in time it can be. Economist Jim Johnston estimates that seabed mining would yield annual benefits to American consumers on the order of $100 million annually by 1990, and $1 billion by the end of the century.[41] Lawyer Frederick Arnold says that its long-term profitability is "ensured" by its "cost and strategic advantages."[42] Johnson and Logue argued in 1976 that:

> Even at the mineral prices which prevailed in 1970, deep-sea mining was very nearly profitable, given the technological developments and forecasted costs of such mining, including substantial profit to compensate for risk. Indeed, since that time the prices of those minerals have risen sharply, while the estimated costs have not kept pace. Thus, it is very likely that deep-sea mining could be profitable today.[43]

They may be overly optimistic, given the world-wide recession and consequent slump in metal prices. However, as the world economy revives, metal prices are expected to increase. Moreover, as the more economical land-based mineral lodes are mined out, such as those in Canada which provide nearly half of the world's nickel, prices will rise even more, providing the incentives for seabed min-

[39]Rebecca Wright, "Ocean Mining: An Economic Evaluation," Ocean Mining Administration, Department of the Interior, May 1976; F.L. La Que, "Different Approaches to International Regulation of Exploitation of Deep-Ocean Ferromanganese Nodules," *San Diego Law Review* 15, no. 3 (1978): 483–484; Welling, "Ocean Mining Systems." Only one of the four private seabed mining consortia definitely intends to extract all four major metals. The others are seriously considering only recovering nickel, copper, and cobalt because it might be more economical. GAO, p. 34. See also Johnson and Logue, p. 44.

[40]CRS, p. 66.

[41]James Johnston, "The Economics of the Common Heritage of Mankind," *Marine Technology Society Journal* 13 (December 1979–January 1980): 26, 29.

[42]Frederick Arnold, "Toward a Principled Approach to the Distribution of Global Wealth: An Impartial Solution to the Dispute Over Manganese Nodules," *San Diego Law Review* 17, no. 3 (1980): 565.

[43]Johnson and Logue, pp. 43–44.

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ing.[44] Thus, although current economic conditions are not propitious for the industry, in the long run the economic incentives should be sufficient to encourage development. The Reagan administration seems to share this view.[45]

The economic studies are equivocal. A U.S. Geological Survey-sponsored study of mining on the Blake Plateau, east of Jacksonville, Florida, estimated a possible return on seabed mining of between 28 and 32 percent.[46] In contrast, C.R. Tinsley, vice president of the mining division for Continental Bank of Chicago, has estimated a return on investment of only 12.8 percent to 15 percent, which, he noted, was less than then-current interest rates.[47]

Given the high risks involved in seabed mining, the actual returns on investment will have to be very large. The initial generation of seabed mining will be very risky. The industry is capital intensive, and will require a long payback. The market risk of seabed mining is substantial: Even if production costs remain stable, once the nodules are raised and processed, demand may still fall because of new land discoveries and more accessible ocean discoveries, technological advances, or economic slumps.[48] For this reason, Tinsley estimates that a rate of return as high as 30 percent will be necessary to attract investment. Meanwhile, Raymond Kaufman, vice president of Deepsea Ventures, believes that the potential profits have been exaggerated by politicians, and that investments in seabed nodules are "marginal" at best.[49]

The economic viability of mining the polymetallic sulfide and cobalt deposits is also unclear. The CRS cautions that "At [the] present time too little is known of marine polymetallic sulfide deposits to project their economic significance."[50] However, the existence of nodule mining technology at a cost that could make manganese

[44]Welling, "Ocean Mining Systems;" GAO, p. 5. The more economical land-based nickel deposits are being mined out, and the quality of the remaining ore is steadily falling. New deposits also are deeper and more expensive to extract. Nor is this just the case for nickel. Land-based manganese ore deposits could conceivably be mined out by the end of century. And the concentration of copper in seabed nodules has ranged up to 100 times the percentage in land-based ores.

[45]"U.S. Votes Against Law of the Sea Treaty," statement by President of the United States, July 9, 1982.

[46]DOI, pp. 7–8, 24.

[47]Tinsley. Another observer suggests a rate of return of 25 percent may be necessary. Knecht, p. 7.

[48]GAO, pp. 32–33; Singer; Alan Abelson, "Who Buried the Law of the Sea?," *Barron's*, July 26, 1982, p. 19.

[49]Kizzia, p. 28.

[50]CRS, p. 50.

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nodule mining competitive suggests that sulfide deposits may eventually be economical to mine. Future sulfide mining costs will most likely be lower because, as noted earlier, the minerals are more concentrated and easier to reach. No projections about the economic potential of cobalt deposits have been made because they were just recently discovered.

Legal Barriers

Unfortunately, there are also legal barriers which affect the economics of seabed mining. For resources within our continental margin, whether oil, sand, or manganese nodules, the legal barrier is primarily the restrictive leasing policies of the U.S. government. Oil and gas leasing offshore, for example, has been severely limited: Four percent of the federal government's offshore acres have been leased, and 2.5 percent are currently under lease.[51] Leasing for hard minerals has been restricted even more, with barely a half dozen leases granted over the years. A recent federal study concluded that the economic incentives for development already existed, but what was needed was "a Federal policy to allow such development."[52]

Development also has been limited by the states. Though few states oppose development per se, many are very concerned about the environmental impact of mining. Thus, state practices toward potential seabed mining vary from cooperative to overtly hostile.[53]

The Law of the Sea Treaty (LOST), approved on April 30, 1982, by a United Nations Conference (but not yet ratified), also restricts continental shelf mineral development. Article 82 mandates revenue sharing for the exploitation of mineral resources, primarily oil and gas, which lie under the continental shelves beyond 200 miles. The percentage of the tax begins at one percent in year six, and increases to seven percent by year 12. Johnston points out that the tax "raises the already high cost of recovery of petroleum" from these areas. He and other observers conclude that the disincentive effect of this tax could be significant. If the world supply of oil shrank by just five percent, world oil consumers could conceivably be paying a third of a billion dollars more, and American consumers would be shouldering 30 percent of that bill.[54]

[51]Robert James Lee, "How Uncle Sam Keeps Us All Energy Poor," *Libertarian Review*, February 1981, p. 26.

[52]DOI, cover memo and p. 3.

[53]Ibid., pp. 40–41, appendix 22. The conflict over oil leasing off California gives an indication of the opposition in some areas.

[54]Johnston, "Petroleum Revenue Sharing," p. 29; Stephen Chapman, "Underwater Plunder," *The New Republic*, April 21, 1982, p. 19.

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The Reagan administration possesses the legal authority to increase leasing and is exercising it. For oil and natural gas, the Interior Department is planning a five-year program to offer one billion acres of the Outer Continental Shelf for lease—most of America's coastline. The industry's response has been enthusiastic.[55]

For the hard minerals, including gravel and sand, shell, and coral, an OCS Mining Policy Task Force evaluated a number of different leasing strategies to encourage mineral development. These strategies include developing a regional leasing schedule, granting leases on a case by case basis when requested, and setting up a prototype site.[56] Though the administration's attention has focused on oil and gas leasing, the task force supported giving greater attention to hard mineral leasing, including leasing for manganese nodules off the coasts of Florida and Georgia. Hopefully, the administration's general emphasis on increased leasing will carry over to hard minerals.

The Outer Continental Shelf leasing act needs to be amended for manganese nodule and polymetallic sulfide mining, since the current OCS framework might be legally inadequate for mining these minerals even within U.S. waters.[57] Some state opposition to mining could be defused through federal-state discussions,[58] though California's opposition to federal oil and gas leasing demonstrates how determined states can block development. As for the LOST inhibition to petroleum production, it can be solved only by failing to adhere to the treaty. (The most compelling reasons *not* to sign the treaty involved deep seabed mining and will be discussed below.)

Since the OCS Act only covers the continental shelf, the administration and Congress need to develop a legal framework to cover the area beyond the continental shelf out to 200 nautical miles. In this regard, the United States could extend its economic jurisdiction—"a better system of dealing with the change in hydrocarbon values and technologies" than increased international regulation.[59] Congressman John Breaux, chairman of the House Subcommittee on

[55]James Watt, "Challenging Industry: A New Ocean Development Program," speech before the National Ocean Industries Association, March 8, 1982; Dale Russakoff, "Bids on Alaskan Oil Rights Top $2 Billion," *Washington Post*, October 14, 1982, pp. A1, A6.

[56]DOI, p. 58.

[57]CRS, pp. 88–89.

[58]DOI, p. 41.

[59]Eckert. In general, such systems are most likely to result in the creation of ocean resource rights most closely resembling land-based private property rights. Idem, "The Wealth Distribution and Economic Efficiency Consequences of the New Law of the Sea," paper presented to the 14th Annual Conference on the Law of the Sea Institute, October 20–23, 1980, p. 1.

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Fisheries and Wildlife Conservation and the Environment, has introduced just such a bill declaring a 200-mile exclusive, economic zone for the U.S., within which the U.S. would have normal sovereign rights over the natural resources.[60] This legislation would extend U.S. jurisdiction over hard minerals just as the Fisheries Conservation and Management Act of 1976 extended U.S. control over fishing out to 200 nautical miles.

Alternatively, the Reagan administration could emulate President Truman's 1945 declaration of U.S. jurisdiction over the continental shelf and proclaim economic jurisdiction over 200 miles, while vowing to respect the freedom of navigation by other nations within that area.[61] Once such a jurisdiction was established, specific leasing legislation to govern hard minerals mining could be passed. Such legislation perhaps could be patterned after the Deep Seabed Hard Mineral Resources Act (discussed below), which was passed in 1980 to provide an interim framework for deep-seabed mining.[62]

The legal barriers facing deep-seabed mining are significant. The American Mining Congress has stated that: "The U.S. ocean mining industry possesses the technology, capital and skilled manpower to develop these mineral resources but lacks a stable and realistic legal regime under which the major investments necessary for commercial development can be prudently made."[63]

There is no general agreement on what form such a legal regime for the seabed must take. Traditionally, it has been argued that if seabed investment is to be encouraged, miners must be guaranteed security of tenure—the exclusive right to mine a specific minesite—through an international treaty.[64] Such a treaty would prevent poaching from competing miners and would resolve conflicting minesite claims.

This desire to forge an international agreement to cover seabed mining led to the inclusion of seabed mining in the LOST process, which turned into an effort to reach a comprehensive agreement to

[60]John Breaux, "Are There Alternatives to the Law of the Sea Treaty?," paper presented to AEI conference, October 19, 1981, p. 11.

[61]CRS, pp. 101–102, 94.

[62]Knecht, p. 8.

[63]"Undersea Mineral Resources," statement of American Mining Congress, September 27, 1981.

[64]Elliott Richardson, "Elliott Richardson on the Seabed Talks," Congressional Record, March 11, 1981, E1029; Samuel Levering, chairman of the Marine Environmental Subcommittee of the Law of the Sea Advisory Committee, et.al., "U.S. Interests and Objectives Furthered by the Law of the Sea Treaty," memorandum, July 28, 1981.

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govern the use of the oceans. The LOST process was sparked by President Truman's 1945 declaration of national jurisdiction over the continental shelf, and the subsequent haphazard extension of such national jurisdiction by other countries. The First Conference on the Law of the Sea was convened in 1958, and drafted four agreements dealing with national ocean jurisdiction and fishing. However, it was unable to resolve certain navigation and fishing questions. A Second Conference met in 1960 and similarly failed.[65]

About the same time the navigational and fishing problems went unresolved, the potential for deep seabed mining was popularized by John Mero, then a graduate student at the University of California, Berkeley. In 1967, the Maltan U.N. representative proposed that the seabed be declared the "common heritage of mankind." This led to the creation of an ad hoc Seabed Committee, and eventually to the organizing of the Third Conference in 1973. It took 11 sessions, but the conference finally completed its task on April 30, 1982, when 130 countries approved the treaty: Four countries voted against the treaty, and 17 nations abstained, including the United States. The 21 nations not supporting the treaty account for over 60 percent of the world's GNP.[66] The treaty, of course, must still be signed and ratified by 60 countries to take effect. It is likely that the necessary signatures will be obtained, but the countries expected to sign and ratify the treaty have virtually no potential for developing the seabeds; those that do—the United States, West Germany, England, France, and Japan—may end up opposing the treaty.

The LOST is by far the greatest obstacle to deep seabed mining. The treaty creates an International Seabed Authority, ruled by a one-nation, one-vote Assembly and a 36-member Council, to regulate deep-seabed mining. A subsidiary body, the Enterprise, would be established to mine the seabed for the Authority, while being subsidized by the industrialized countries. The Authority would be empowered to deny access to the seabed, limit mineral production, mandate the transfer of mining technology, and redistribute revenue to developing and disadvantaged countries.

By imposing a regulatory scheme on an otherwise free market, the LOST threatens seabed development. The treaty will breed inefficiency and cause development costs to increase, which will decrease

[65]Martin Glassner, "The Law of the Sea," *Focus*, XXVIII (March-April, 1978): 6–9.

[66]Kizzia, pp. 24–28; Glassner, pp. 7–9; James Malone, testimony before the House Merchant Marine and Fisheries Committee, July 20, 1982, pp. 3–4.

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seabed mining activity.[67] One especially burdensome requirement of the treaty is that contracts for development must be approved by a Legal and Technical Commission, the membership of which could be stacked by opponents of seabed mining.[68] Development contracts must also be approved by the 36-member Council. The Council would be dominated by Third World nations, and the United States is not even guaranteed a seat. Efforts were made last spring to assure the U.S. a Council seat by stipulating that one seat be reserved for the largest mineral consuming country. However, depending on the definition used, the U.S. could be crowded out by the Soviet Union or Japan.[69] Thus, despite America's disproportionately large interest in seabed mining, America would have little hope of protecting its interest in the Council. Indeed, U.S. seabed investors would be dependent on the good will of countries that either oppose seabed mining, since they are domestic mineral producers, or which are America's political adversaries, such as the Soviet bloc (which is already guaranteed three seats by name).

The Council would have plenty of excuses to reject private miners' requests for permission to mine. A company first would have to gain an exploration contract, survey two potential minesites at its own expense, and allow the Authority to choose one for the Enterprise to mine. Then the company would have to apply for a production authorization, which could be denied if the Authority decided to award the one remaining minesite to a competing private company, a developing country, or even conceivably the Enterprise. The request could

[67]Eckert, *Enclosure of Ocean Resources*, pp. 297, 245–250; Johnson and Logue, pp. 47–56; Johnston, "Economics of the Common Heritage." Some treaty proponents have admitted that the treaty has created some unnecessary obstacles to seabed development, but believe them to be minor or, at the time, remediable. Letter from Lee Kimball, United Methodist Law of the Sea Project, to Doug Bandow, November 24, 1981; Levering, et.al., memorandum. Indeed, even Elliott Richardson, before he started defending LOST as his personal legacy, said the treaty had "serious deficiencies." Elliott Richardson, "Power, Mobility and the Law of the Sea," *Foreign Affairs* 59 (1980): 916.

[68]Lilliana Torreh-Bayouth, "UNCLOS III: The Remaining Obstacles to Consensus on the Deepsea Mining Regime," *Texas International Law Journal* 16 (1979): 103; testimony of Northcutt Ely before the Senate Foreign Relations Committee, September 30, 1981, appendix, pp. 7–9; Theodore Kronmiller, "Reconciling Public and Private Interests in Multilateral Negotiations: The Law of the Sea Conference," St. Louis University School of Law Public Law Forum 1 (1981): 164–165; W. Scott Burke and Frank Brokaw, "Law at Sea," *Policy Review* 20 (Spring 1982): 74.

[69]Kronmiller, p. 165; Leigh Ratiner, "The Law of the Sea: A Crossroads for American Foreign Policy," *Foreign Affairs*, Summer 1982, p. 1016; memorandum from Bob Keating to James Buckley, August 3, 1982; National Association of Manufacturers, "Law of the Sea," *Issue Brief*, July 1982.

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be turned down if allowing mining would violate the so-called "anti-density" restriction on the number of sites per country in a geographical area or the "anti-monopoly" limit on the total number of contracts awarded to any particular country. Finally, mining would be disallowed if the added production would break the overall limitation on mineral production.[70]

Some people have suggested that the Preparatory Investment Protection resolution, passed in April 1982, would guarantee the access to mining that the treaty lacks. That resolution, however, only grandfathers seabed mining companies into the treaty, not out of it. Thus, they still would be subject to all of the vagaries of the treaty. The resolution also imposes financial obligations on the companies being "protected." And, though the resolution guarantees existing consortia priority in getting production authority, it only applies to a limited number of companies—four Western private consortia plus the USSR, Japan, France, and India—that have already made some investments. New entrants could not avail themselves to even its limited protections, and the latter four countries are placed on an equal basis with the four Western consortia even though their investment activities to date have been minimal.[71]

The fundamental goals of the Authority, instead of encouraging mining, discourage it. For example, article 150 of LOST directs the Authority to promote "orderly and safe development," "rational management," "just and stable prices remunerative to producers," and "the protection of developing countries from the adverse effects [of mining]." Article 151 formalizes the bias against mineral development by explicitly setting a production ceiling and providing for commodity agreements (how severe the restriction is likely to be in practice is a matter of debate and depends on future mineral market trends). Enforcement of the production ceiling will limit not only production, but also the number of minesites. Furthermore, since the limit is based on nickel (ironically, to protect Canada, not poor or developing nations), changes in demand for the other minerals cannot be accommodated if increasing production would push the amount of nickel produced above the limit.

In article 5 of annex III to the treaty, private companies, as a precondition to receive a production authorization, are required to

[70]Northcutt Ely, "One OPEC Is Enough!" *Regulation*, November/December 1981, pp. 19–21.

[71]Leigh Ratiner, testimony before the House Foreign Affairs Committee, June 17, 1982, pp. 6–7; Report of the United States Delegation, June 1982, pp. 8–10; Malone testimony, p. 6; American Mining Congress statement; Brooks, p. 8.

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obligate themselves to sell their proprietary seabed mining and processing technology to other operators, and to transfer such technology to the Enterprise and developing states. Theoretically, transfer can be forced only if the Enterprise is unable to purchase the technology, and compensation is provided for. In reality, the provision creates a forced sale, making it impossible for private business to negotiate a fair deal. The provision also provides no effective redress for unauthorized disclosure of secrets. It would affect technology used to mine other minerals in the area, and would include technology that has broader use, including for offshore oil and gas development. Technology is left undefined, and could conceivably include navigational, computational, and communications equipment, as well as the "very essence of engineering skill." There would be no patent protection, and the incentives for technological innovation would be sharply reduced. Consequently, some equipment suppliers have made it clear that they would not provide equipment to seabed mining companies subject to such regulations.[72]

Indeed, the mere threat of invoking these articles is enough to place private business at a great disadvantage, which is why businessmen have reacted with something akin to apoplexy. And rightly so. Proprietary technology is their private heritage, not that of the U.N. or foreign governments.

Private miners are grossly discriminated against by the treaty. They must prospect a site for the Enterprise and transfer their technology to it on demand. Moreover, the Enterprise is subsidized by the developed countries—the U.S. is to cover 25 percent and is to be exempt from taxes and payments to the Authority. These competitive disadvantages extend to article 152, which grants special consideration for developing countries and particularly to "land-locked and geographically disadvantaged" countries, which comprise a 119-nation majority.[73] This disadvantage is exacerbated by the taxes and fees on private miners. Miners face an application fee, annual fee, production charge and/or royalty charge. The total would be very large, and though it is difficult to predict, some estimates range from $250 million to $2 billion over the life of the contract.[74]

[72]Richard Legatski, testimony before the Subcommittee on Oceanography, Committee on Merchant Marine and Fisheries, October 22, 1981, pp. 3–7.

[73]Ely, "One OPEC Is Enough!," p. 24.

[74]Ely testimony, appendix, pp. 20–26; Brooks, p. 7. This should hardly be surprising. The U.N. Secretary General estimates start-up costs in the hundreds of millions of dollars. "Law of the Sea Conference to Resume Tenth Session at Geneva Beginning 3 August," U.N. Doc. SEA/140 (1981), pp. 6–7.

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Finally, even if private miners were not discouraged by these provisions, and believed that over the estimated 20- to 25-year life of the minesite they could recoup their investment in the face of an uncertain minerals market, they would have to accept the risk that their investment might be prematurely terminated. Article 155 of the treaty provides for a Review Conference to convene 15 years after the commencement of commercial mining under the treaty, and allows a three-fourths majority to amend the treaty, with a dissenting nation only able to denounce the treaty as a whole and withdraw.

Since the G-77 special interest lobby—a coalition of developing countries—contains roughly 80 percent of the member states and the Soviet bloc adds another 10 percent, the United States would not be able to block an amendment at the Review Conference eliminating all private mining, a concession the G-77 demanded when the LOST negotiations first began. Withdrawing from the treaty after it had been in effect for two decades would be politically difficult and therefore unlikely. Moreover, the operation of the treaty for two decades may then have changed customary international law, precluding unilateral private mining.[75]

Even if none of these provisions in isolation unduly discouraged investment, their combined effect is to "create a political climate hostile to private investment, and . . . [to] restrict the usefulness of the investment as to make it unattractive even if the political climate were benign."[76] The result is to make it difficult, if not impossible, for companies to raise the money necessary to mine. Welling bluntly declares that it would be "impossible" to raise funds, and bankers across the United States have made it clear that they do not want to lend money for operators under the treaty.[77] The head of America's delegation to the Conference told Congress that the deep-seabed mining consortia "could not and would not carry out commercial mining under the treaty."[78]

[75]Torreh-Bayouth, p. 107; John Breaux statement, *Congressional Record,* March 10, 1981, p. S1968.

[76]Ely testimony, p. 3. His sentiments are shared by other observers. Roger Geddes, "The Future of United States Deep Seabed Mining: Still in the Hands of Congress," *San Diego Law Review* 19 (April 1982): 616; American Mining Congress statement; Tinsley, pp. 14–15; Johnston, "Economics of the Common Heritage," p. 28.

[77]Abelson, p. 10; Susan Jenks, "Sea Treaty Refusal Seen Bad for U.S.," *Washington Times,* September 22, 1982, p. 4A; GAO, pp. 32–33; Ann Hollick, "Seabed Minerals for the Future," paper presented to AEI conference, October 19, 1982, p. 7. Tinsley's study shows that LOST would result in a lower rate of return than even under an unilateral American system. Tinsley, p. 14.

[78]Malone testimony, p. 8. This is not the unanimous view. Elliott Richardson, who headed the negotiations under President Carter, has argued that the treaty assures access for American companies. ("On the Seabed Talks.") But it is difficult to find anyone who would have to put up the money and operate under the proposed system who agrees with Richardson.

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Of course, most any disincentive could be overcome by federal subsidies or loan guarantees. But the industry has not asked for such special privileges, and subsidies would make no sense. The minerals on the seabed are of value if they can be economically developed; encouraging uneconomic development would merely waste resources.

The treaty also places a moratorium on mining polymetallic sulfides and cobalt deposits. Mining for these resources, which are potentially more accessible than manganese nodules, must wait until a different set of rules and regulations are adopted to cover them, which could be never. The treaty does require the adoption of such rules and regulations within three years, but any nation opposing seabed development which sat on the Council could, and probably would, block them by preventing their approval by unanimous consent. Since there is nothing to force the Authority to adopt rules and regulations, mining would remain forbidden indefinitely. As long as the Authority is controlled by the G-77, they would control the process for resolving treaty impasses as well.[79]

Alternative Seabed Development Strategies

Since the administration has decided that it will not sign the treaty, it is now seeking to create some alternative arrangements to allow seabed development to proceed. This is the only possible course of action. Speaking on behalf of the American Mining Congress, Welling in his congressional testimony stated:

> There are those who argue that outside of the framework of the Law of the Sea Treaty, deep-sea minerals mining is doomed. If one agrees that the treaty text is deeply flawed, it makes no sense to say, "yes, the treaty is flawed, but we should join, because that's our only real hope." I submit that if something is fatally flawed, you don't join it; you seek something better.[80]

Alternative arrangements are important for two reasons. The most obvious is that such mining is beneficial, and is unlikely to proceed without some sort of legal system (the reasons why will be discussed in greater detail later). The more subtle, but just as important, reason is that there is a pervasive belief that the administration will be forced to reverse itself, or that a future administration will reverse policy

[79]The former delegation deputy chairman has argued that the three-year requirement solves the problem. Ratiner, "Crossroads," p. 1016. Ironically, before becoming a consultant to the U.N., he told the U.S. delegation of one negotiating session with Alvara deSoto, the head of the G-77, in which deSoto stated quite clearly that the moratorium would remain in place as long as regulations had not been adopted.

[80]"Comment," *Oceanus* 25 (Fall 1982): 2.

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and sign the treaty.[81] However, if the United States is able to establish a functioning alternative system, it will be less pressured to sign the treaty. Only so long as the rest of the world has LOST, while the U.S. has nothing, is there a danger of U.S. acceptance and ratification.

One option is to accept the treaty if the rules and regulations proposed by the Preparatory Commission, which will meet in the years ahead, resolve the problems extant in the treaty.[82] For example, the Prep Com, as it is known, will adopt the definition of what the largest consuming nation is, determining whether or not the U.S. is guaranteed a seat on the Council. Unfortunately, the flaws in the treaty are too fundamental to be remedied by rules and regulations, particularly since they cannot overrule the treaty itself.[83] It is curious that anyone would believe the Prep Com will behave any more favorably than the Conference that drafted the treaty. The developing countries chose to create a regime to redistribute international wealth and to discourage deep seabed mining; the Prep Com will almost certainly reinforce that system.

A related option would be to seek to amend the treaty. The best opportunity to do so was in September 1982, when the Conference met to approve technical changes recommended by the so-called Drafting Committee. It is also conceivable that an agreement could have been reached before December 1982, when the treaty was ready for signature.[84] However, both of these dates are now past, and the U.S. failed to gain any fundamental amendments last spring in a far more positive negotiating and procedural climate. Thus, it is very unlikely that the U.S. could get any significant changes in the treaty at this time. And, even if changes were possible, they would undoubtedly fall far short of the package necessary to make the treaty acceptable.[85]

[81]Jennifer Whitaker, "Outside the Mainstream," *Atlantic Monthly*, October 1982, p. 26; Ratiner, "Crossroads," p. 1021; "Koh: Mining Issue May Go to World Court," 8 (June/July 1982): 6; Abelson, p. 19.

[82]Jenks.

[83]Robert Lagomarsino statement, Congressional Record, March 10, 1981, p. S1968; Breaux statement.

[84]Ratiner, "Crossroads," pp. 1020–1021; Whitaker, p. 26; "Law of the Sea Pact To Be Signed in Jamaica," *New York Times*, September 26, 1982, p. 5.

[85]Norway's delegation head, Jens Evensen, suggested a compromise package much more moderate than the most important compromise set of proposals offered at the final LOST session. That set, offered by the so-called Group of 11 smaller industrialized nations, fell far short of meeting American objectives—even in the opinion of the pro-treaty former delegation deputy chairman. Ratiner, "Crossroads," p. 1016. The comparison can be made by reviewing the relevant documents. "Law of the Sea," State Department Bureau of Public Affairs, Policy No. 371, January–February 1982; "Changes Suggested by the Heads of the Delegations of Australia, Canada, Denmark, and Norway on Behalf of a Group of Ten Heads of Delegations" (the 10 later expanded to 11), U.N. Doc. WG.21/Informal Paper 21, March 25, 1982.

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A better plan would be to create a totally separate system, one based on free enterprise and minimal regulation. Doing so would rely on individual nations to extend the "propertization" (or "enclosure") of the ocean to create seabed mining regimes that recognize property rights in seabed resources.[86] Such a system would not preclude some sort of compromise measure involving profit-sharing with Third World countries, joint ventures, equity participation, or whatever. Such expedients, though otherwise undesirable, might help limit international opposition to a separate American system.

In fact, it has been argued that such a system need not be governmentally created because it would evolve naturally. Private individuals and companies now possess a right to mine the deep seabed under the doctrine of freedom of the high seas: The resources are *res nullius*, owned by no one, and can be collected by whoever expends the labor and capital to do so.[87] Moreover, the sheer abundance of the resources provides enough for many miners, making poaching and claim-jumping unnecessary. The physical characteristics of the terrain requires extensive surveying and exploration to avoid damage to delicate mining equipment and to efficiently collect the nodules, making it just as cheap to find a new site.[88]

There are many historical examples of people implementing the Lockean notion of establishing property rights with those who identify resources and mix their labor with them: "As much land as a man tills, plants, improves, cultivates, and can use the produce of, so much is his property."[89] The American West developed in this way, with government institutions and legal order only following informal economic order. Civil law was entirely absent during the California Gold Rush, but traditional miners' law arose. By mutual agreement among the miners, title "was derived from the first locator, and continuity

[86]Gary Knight, "Legal Aspects of Current United States Law of the Sea Policy," paper presented to AEI conference, October 19, 1981, p. 13; Eckert, "Wealth Distribution," p. 1; Robert Keating, "Positive Alternative to International Seabed Authority for Seabed mining," memorandum to Theodore Kronmiller, June 17, 1981, p. 1; Eckert, *Enclosure of Ocean Resources*, p. 218.

[87]John Murphy, "The Politics of Manganese Nodules: International Considerations and Domestic Legislation," *San Diego Law Review* 16 (1979): 536–541; Knight, pp. 7–8; Torreh-Bayouth, pp. 84–98; Kronmiller, p. 160; American Mining Congress statement, p. 2. Another observer believes the arguments on both sides to be "unconvincing." Arnold, p. 574.

[88]Singer; Johnson and Logue, p. 47; Eckert, *Enclosure of Ocean Reources*, pp. 217, 241–245.

[89]Robert Goldwin, "John Locke," in *History of Political Philosophy*, 2nd ed., L. Strauss and J. Cropsey, eds. (Chicago: University of Chicago Press, 1981), p. 462.

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of work sufficed to maintain persistence of ownership."[90] Even at the international level a similar result occurred with the Spitzbergen Archipelago, where a multinational treaty recognized the right of those individuals who had previously occupied and used the land.[91]

At least one of the mining consortia, Deepsea Ventures, has said it may mine the seabed without any treaty. Its president, Jeffrey Ams-baugh, has been quoted as saying: "We would hope the United States would protect us just as if we were fishing out there."[92] Unfortunately, this appears to be the minority position. Most companies are concerned about their security of tenure against other American or foreign firms, and most observers believe that investment will occur only when such rights are institutionalized. In the absence of some legal regime, it appears that seabed mining would be limited to areas within America's 200-mile limit.[93]

This is probably true today simply because of the existence of the LOST. Were there no conflicting international regime, American companies might be willing to venture forth because of the realities of deep-seabed mining explained by Eckert and others. But where miners would face a competing—and hostile—international system, the need for countervailing legal protection is greater. This desire for legal sanction, however, does not mean industry support for the treaty. Industry leaders have made it clear that they prefer no treaty to the current one, which guarantees that virtually no mining would be undertaken.[94]

Legal recognition of title to minesites could be granted unilaterally by the U.S. government through legislation similar to the Deep Seabed Hard Minerals Act of 1980. This Act was specifically designed as an interim measure and was passed to encourage exploration of the seabed before LOST was signed, when the Act was to be superseded. Though the legislation helped keep the American deep seabed min-

[90]Knight, p. 13; Terry Anderson and Peter Hill, "The Evolution of Property Rights: A Study of the American West," *Journal of Law and Economics* 18 (1975): 168–179; Robert Poole Jr., statement to the Subcommittee on Oceanography, House Committee on Merchant Marine and Fisheries, October 22, 1981, p. 5; T.A. Richard, *A History of American Mining* (1932), p. 33; Michael McMenamin, "Battle of the Seabed," *Inquiry*, July 6 & 20, 1982, p. 22.

[91]L.F.E. Goldie, "A General International Law Doctrine for Seabed Regimes," *International Law* 7 (1973): 807–811.

[92]Kizzia, p. 23.

[93]Murphy, p. 549; American Mining Congress statement; David Dickson, "Scuttling the Sea-Law Treaty," *The Nation* May 30, 1981, p. 666; "Drilling Awaits Sea Treaty," *Energy*, March 1982, p. 23.

[94]Richard Legatski, statement to Subcommittee on Arms Control, Oceans, International Operations and Environment, Committee on Foreign Relations, March 5, 1981, p. 1.

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ing industry alive as the treaty was being negotiated, virtually no one believes that the Act as it now stands can support a mining industry.[95]

The Act could be amended to eliminate the prohibition of mining through 1988 and to transform it into a permanent system. It should also be amended to reflect the differences between mining manganese nodules and polymetallic sulfides. It is not clear that the Act as written covers the latter deposits.[96] In the meantime, the NOAA could invite a second round of applications for exploration licenses under the Act, and process them.

Amended legislation would clearly establish legal tenure Americans, and other nations arguably would respect such a system because it would be more viable than that theoretically established by LOST. However, opinion is sharply divided over whether such a unilateral system would be adequate to encourage development. In the past, advocates of LOST feared that a unilateral American system would succeed, but now they argue it would not; opponents of LOST are also split.[97] Former Ambassador Elliot Richardson has been on both sides of the issue. He now claims that only LOST can guarantee seabed minesites, but he told Congress in 1978 that "Seabed mining can and will go forward with or without a treaty. . . . We have the means to protect our ocean interests. . . . And we will protect those interests if a comprehensive treaty eludes us."[98]

Some people have argued that non-mining countries would respond to unilateral American legislation with boycotts of mineral resources, sabotage, expropriation of assets, and lawsuits in the International Court of Justice.[99] The threat of such actions, if thought likely, would obviously make lenders uncomfortable loaning money to private seabed mining companies. Such actions, however, are unlikely to occur. Boycotts would hurt those boycotting, particularly cash-poor Third World nations. Boycotts are therefore likely only if crucial

[95]Torreh-Bayouth, pp. 87–89; F. Patterson Willsey, "The Deep Seabed Hard Minerals Resources Act and the Third United Nations Conference on the Law of the Sea: Can the Conference Meet the Mandate Embodied in the Act?," *San Diego Law Review* 18 (April 1981): 510; Conrad Welling, "The Oceans' Waiting Mineral Resources," *Stockton's Port Soundings*, August 1980, p. 8. Former House Merchant Marine and Fisheries Chairman John Murphy was more positive, though this was before it looked like the U.S. would be opposing an international sea law treaty. Murphy, p. 551.

[96]CRS, pp. 88, 102.

[97]Compare Arnold, p. 574, and Gullion, p. 8, with Levering, et.al.; compare Hawkins, p. 184 with Michael Molitor, "The U.S. Deep Seabed Mining Regulations: The Legal Basis for an Alternative Regime," *San Diego Law Review* 19 (April 1982): 608.

[98]Compare Department of State Bulletin, February 1981, p. 57, with "2 Negotiators Say U.S. Should Sign Sea-Law Treaty," *Los Angeles Times*, September 21, 1982.

[99]Torreh-Bayouth, p. 89.

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issues are at stake, and there is no evidence that anyone in the Third World, aside from a few international lawyers, diplomats, and propagandists, believes LOST is crucial. Sabotage would be difficult, and expropriation would occur only if the issues were important; unilateral mining could provide an excuse, but it would hardly be sufficient cause. Finally, the International Court of Justice is political and routinely ignored. If American minesites cannot be challenged in a meaningful way despite Third World claims to ownership of the seabed, a legally unsupported adverse opinion of the ICJ would not change matters.

Greater security of tenure could be provided through an agreement on a system to allow resource development among the most likely seabed mining nations. One form of agreement, such as the proposed Reciprocating States Agreement (RSA), would build upon domestic legislation. The RSA, envisioned between the United States, England, West Germany, France, and Japan, would resolve differences on national legislation, current and future mining claims, and so on. Such an agreement was drawn up in early 1982, and was nearly signed, but technical problems and the imminent final LOST Conference led to a breakdown.[100]

Since the RSA was designed to provide an interim system until the treaty itself came into effect, most supporters of such an agreement now envision its expansion into a mini-treaty, creating a permanent seabed mining system apart from that established by LOST. The core members of such a treaty would be the potential seabed mining nations, but non-seabed mining nations could also join. They would be able to participate in joint ventures or corporate consortia. Mining would be regulated not by an international bureaucracy, but by the respective nations sponsoring the individual mining companies.[101]

There are two serious criticisms of both the RSA and a mini-treaty. The first is that they are unattainable, since the other industrialized nations will sign and ratify LOST rather than a separate treaty with the United States. The reasons vary. Some might sign because they believe LOST would give them better "color of title," others to ensure friendly relations with the Third World, and others to gain benefits from other sections of the treaty, including navigation. For instance, supporters of the treaty argue that West Germany has a

[100]"Agreement Concerning Interim Arrangements Relating to Polymetallic Nodules of the Deep Sea Bed," draft document 1982; Brooks, p. 15; Lee Kimball, "Is There a Mini-Treaty? Will There Be One?," *Neptune*, March 1982, pp. 1, 7; Whitaker, pp. 21–22.

[101]Brooks, pp. 15–17; American Mining Congress statement; Kizzia, p. 24.

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special incentive to sign since the Law of the Sea Tribunal is to be based in Hamburg, giving Germany new international legitimacy.[102]

On the other hand, Germany, France, and Great Britain joined the United States in signing an agreement in September 1982, to help resolve any conflicts between potential minesites. The agreement was a surprise to LOST supporters, and endorses an earlier private arbitration agreement signed by companies from nine different nations.[103] Though this agreement is modest, it is an indication that at least these three countries—and Japan, which didn't sign for rather technical reasons—may ultimately be willing to join the United States in a separate agreement.

There are other reasons to believe a number of the industrialized nations might join the United States as well. In Germany, for instance, the criticism of the treaty has most closely paralleled that in the United States, and harsh attacks have been made by CDU-CSU members of the Bundestag, who recently took power. Even the LOST Conference president admits that the potential financial burden without the United States paying its 25 percent share may cause a number of European countries to hesitate signing and ultimately ratifying the treaty. This is particularly true of the Soviet Union, which dislikes the financial obligations and other treaty restrictions, and has an interest in resolving potential minesite claim conflicts by joining in an agreement with the United States.[104] Moreover, other nations will have great difficulty mining the seabed under LOST because even if they find the treaty's investment environment satisfactory, they will need American technology. However, because of LOST's technology transfer provisions, Richard Legatski of the National Ocean Industries Association says: "U.S. companies won't do business with them."[105] This gives other nations an incentive to join in a separate agreement with us.

[102]Ratiner, "Crossroads," p. 1010; Whitaker, p. 26; "Koh: Mining Issue," p. 1.

[103]U.S. State Department "Agreement Concerning Interim Arrangements Relating to Polymetallic Nodules of the Deep-Sea Bed," final agreement, 1982; Steve Beckner, "Bypassing Sea Treaty Makes Good Business Sense," *Washington Times*, October 22, 1982, p. 6B; Steve Beckner, "U.S. Seeks to Develop Ocean Floor Minerals," *Washington Times*, October 20, 1982, p. 4A; Thomas Lippman, "U.S., 3 Allies Sign Deep-Sea Mining Pact," *Washington Post*, September 4, 1982, p. A12; Amsbaugh and Van der Voort, pp. 26–27.

[104]Whitaker, p. 26; "Koh: Mining Issue," p. 6; Hans Jurgensen, "Vote At UN Law of the Sea Conference Ends Debate But Begs Question," Frankfurter *Allgemeine*, May 3, 1982; Elmer Rauch, "Political Consequences and Possibilities for Development of Sea Law from the Point of View of the USSR," Final Report, German Institute for East/West and International Studies, 1982, p. 110; Brooks, p. 16.

[105]Beckner, "U.S. Seeks to Develop"; Brooks, p. 18.

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The second criticism of a mini-treaty is that it would fail to give sufficient legal title to minesites to allow companies to get bank financing. The Conference president has appointed himself "one of the guardians of the 'common heritage of mankind'," and has threatened to sue the United States in the World Court. Such litigation, it is argued, would help create enough uncertainty over security of tenure to discourage investment.[106] One observer has argued:

> The right to mine the deep seabed must be conferred upon those nations that have the technical and financial means to do so by the entire community of nations. A reciprocating State regime composed of a handful of deep seabed nations has no better chance of circumventing the global character of the deep seabed than do the municipal efforts of an individual State.[107]

In fact, this misperceives the issue. As previously discussed, international law currently allows deep seabed mining; only a universal treaty can change that. LOST, without the relevant actors' consent, cannot. More importantly, though a universal treaty would at least appear to give better title than a mini-treaty, LOST will not be universal. For this reason, the "rights" created by LOST would not be superior to those created by a separate treaty, depending on the quality of participants. In the real world, what the United States and Germany and the other likely seabed mining states think about seabed mining is far more important than what, say, Bolivia and Zaire think.

Thus, even the Conference president apparently believes that an agreement with all of the potential seabed mining countries would succeed.[108] An agreement, for example, with the 21 nations that did not support LOST last April would involve countries controlling more than 60 percent of the world's GNP and contributing more than 60 percent of the UN's budget.[109] Why would a treaty involving these countries and including all of the parties most interested in seabed mining be considered inferior? Indeed, Marne Dubs, then-Kennecott Copper's spokesman, has stated that while two nations would not be enough for a separate agreement, four would allow development to proceed, with the evolution of the system determining whether commercial production could eventually result.[110]

[106]Zoriana Pysariwski, "Law of the Sea: Uncertainty Follows the Euphoria," *South*, August 1982, pp. 62–63; "Koh: Mining Issue," p. 6; Ratiner, "Crossroads," p. 1017; Abelson, pp. 10–11; GAO, p. 32.

[107]Molitor, p. 608.

[108]"Koh: Mining Issue," p. 6. His opinion appears to be shared by others. Knecht, p. 11.

[109]Malone, pp. 3–4.

[110]Kimball, pp. 7–8.

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Therefore, with a mini-treaty among enough seabed mining nations, investment would likely proceed. As the American Mining Congress said: "While the best of all worlds would be a comprehensive, universally acceptable treaty, a treaty such as the current UNCLOS draft that fails to protect American interests is no basis for investment. We can easily do without the 'comprehensive' and 'universal,' but we cannot do without 'acceptable.' "[111]

Conclusion

The Reagan administration will determine the future of deep seabed mining by its efforts to create an alternative legal system. The more countries it gets, the more likely it is to thwart LOST with its socialistic intent and anti-development effect. The administration must also take the long view. Even if some Europeans and the Soviets sign the treaty, they are unlikely to ratify for years, while the Prep Com is debating rules and regulations. As an independent system takes shape and seabed development proceeds, other nations will realize that it is this system, and not a hollow propaganda shell created by a non-universal LOST, which is their real competition, and the one that they must ultimately deal with.

The critical element again is probably economic. The lack of a universally recognized right to mine is merely another risk. If the rate of return is high enough, this risk will be assimilated with all of the others, and investment will take place. If the rate of return is not high enough, it will not.

The use of the ocean has been expanding dramatically in recent decades. Exploitation of resources of all forms in both the continental margin and ocean basin is technically feasible and, in many cases, probably profitable. But just because it is feasible and profitable does not mean that it will occur. Unfortunately, international politicians are holding economic development hostage to political demands.

The political barriers they have constructed may cause potential investment to flow into other channels that offer more certainty of an adequate rate of return. But if world demand continues to increase and mining technology advances, we may find an inexorable expansion of development, after which more effective and just legal systems will develop to conform to the informal institutions that developed to reflect economic reality.

[111]American Mining Congress statement. Welling testified that the AMC views such an agreement as the most viable basis to create acceptable legal arrangements. "Comment," p. 2. Other observers agree. Hawkins, p. 184.

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The oceans offer us much in terms of economic development for all nations and peoples. Much of that development will take place if the U.S. government allows American ingenuity and innovation to thrive. But much more is in doubt since it must take place in international areas. Perhaps the greatest tragedy would be if the desire for political favoritism on the part of some nations blocked economic development that would benefit their people the most.

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SENTIMENT, GUILT, AND REASON IN THE MANAGEMENT OF WILD HERDS

Garrett Hardin

The Malthusian multiplication of burros and wild horses in recent years has created a political controversy that will not soon be resolved. The dispute is inescapably political because the animals are on public lands; it is controversial because the answer depends not only on the facts, which can be scientifically determined, but also on conflicting human value systems, which is an area for policy decisions. As for the facts, the number of mustangs, for example, has been estimated to have increased from 15,000 in 1972 to a present 45,000, all feeding on public land in the West.[1] If these figures are correct, the yearly rate of increase of the wild horse population has been 12 percent.[2] Considering the trouble that follows from human rates of increase of one to four percent, we should not be surprised that a 12 percent increase in an equine population creates problems.

The government is necessarily involved in these problems. As always, at times the left hand seems not to know what the right hand is doing. This is no news to government watchers, but it is bad news. The Taylor Grazing Act of 1934 required government agents to make their decisions on the basis of the carrying capacity of the lands being grazed. Using popular language, we could say that the Taylor Grazing Act is built on the rights of the land, largely ignoring rights that might be imputed to animals or their owners. In practice, of course, the political muscle of the owners of the animals is not without power.

On the other hand, we have the Wild, Free-Roaming Horses and

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[1]*Newsweek*, May 10, 1982, p. 14.

[2]For comparison, the rate of natural increase of the human population of the United States is now 0.7 percent. The highest rate of increase in a nation-sized human population is probably that obtaining right now in Kenya, namely 4 percent.

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Burros Act of 1971, which is based on a completely different philosophy. In effect, it imputes rights to the animals themselves—animals without owners in this case—and takes no account of the destruction of the public land by the too numerous wild horses and burros. The Act extends the application of the rights that Karl Marx proclaimed in 1875: ". . . and to each according to his needs." The increase in an unrestrained population of wild animals is necessarily Malthusian, so the assertion that each and every burro or mustang has a right to life, forever and ever, is a recipe for the destruction of their environment—and, ultimately, of themselves. For these unfortunate animals, government lands are a commons, and a limited one at that. In the absence of negative (corrective) feedbacks, these protected animals will once more create a tragedy of the commons.[3] In fact, the tragedy is already well under way. If human behavior could be freed of human nature, we could say that the tragedy is unnecessary, since we need only to replace the unmanaged commons with a responsible system.[4] But our all-too-human nature lays the foundation for the phenomenon of political inertia: Every substantial change in our view of what is right requires at least one generation, and often more than two, before it becomes embodied in law. This is a tragedy of another sort, and apparently we must live with it.

The Leopold Saga

The metamorphosis that society must now make was undergone by Aldo Leopold in the first half of this century.[5] Beginning his professional life as a bounty hunter, Leopold thought that he could increase the well-being of wild deer herds by eliminating their predators. As the number of predators decreased, the deer population did multiply, but the environment deteriorated and so did the health of the deer. After several years of entertaining one medical hypothesis after another, Leopold found the explanation: There were just too many deer. Since it was not politically feasible to endorse a program that encouraged the growth of predator populations, intelligent game managers suggested that the excess deer be killed, the sooner the better. This about-face was necessitated by the facts, but it was unacceptable to the public, which had been subjected to "pro-life" propaganda concerning deer for many decades.

[3]Garrett Hardin, "The Tragedy of the Commons," *Science* 161 (1968): 1243–48.

[4]Garrett Hardin, "An Operational Analysis of 'Responsibility,' " Garrett Hardin and John Baden, eds., *Managing the Commons* (San Franciso: W.H. Freeman, 1977).

[5]Susan L. Flader, *Thinking Like a Mountain* (Columbia: University of Missouri Press, 1974).

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The "pro-life" stance was greatly strengthened by the 1942 release of the Walt Disney movie, *Bambi*. Game management theory, which gives carrying capacity considerations dominance over individual rights to life, collided head on with the implication in *Bambi* that innocent life is sacred. *Bambi* is, of course, not a treatise on game management, but the implications of an artistic work can have far more influence on the public than the most carefully wrought academic theory. Just when the game managers seemed to be making progress in persuading the public of the primacy of carrying capacity, *Bambi* came along. In the following year, the miserable condition of the deer and their environment in Wisconsin led the authorities to sanction an "antlerless season" in the hope of reducing the breeding population.

Perhaps because so much of the hunter population was off to war in 1943, the special season resulted in only a 10-percent reduction in the deer population (though this must have included more breeders than would have been killed in a traditional hunting season limited to mature bucks). From a game management point of view, the kill of 50,000 out of an estimated population of 500,000 was far from enough. In terms of the public reaction, it was more than enough. A Save Wisconsin's Deer Committee was formed, and the first issue of its official newspaper, *Save Wisconsin's Deer,* was published in August 1944. The issue included an open letter to the governor, state senators, and assemblymen of Wisconsin with the following significant passage:

> The infamous and bloody 1943 deer slaughter was sponsored by one of the commission members, Mr. Aldo Leopold, who admitted in writing that the figures he uses were PURE GUESSWORK. The commission accepted his report on that basis.
>
> Imagine our fine deer herd shot to pieces by a man who rates himself as a Professor and uses a GUESS instead of facts? Mere fawns just out of their spots were sacrificed by our conservation commission. Does, with young already conceived, young, immature bucks, in fact, everything that ran was indiscriminately slaughtered, not by sportsmen, but by the commission's poison propaganda.

Two points deserve noting. First, the motive of this commission was in no way different from the motive of the game managers: to save the deer. The difference between the two groups lies in their time perspective and in their grasp of reality. The deer committee wanted to save each and every deer life today, ignoring what would happen tomorrow if such a policy were adopted. In contrast, game managers wanted to save the maximum number of lives in the long

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run and ensure that the health of the surviving population was maximized.

Second, to manage a population of animals it is not necessary to census it exactly. All you have to do is "read the environment." If there are too many grazing or browsing animals, evidence of the surplus can be read in the deterioration of their food source. Yet, so well has science been popularized that the public thinks we must always know exact numbers before we can act. Leopold, who deduced from the manifold evidences of environmental deterioration that the animal population was past its optimum point, was accused of indulging in "pure guesswork." Exact figures are fine, but often simple eyeballing is sufficient to lay out a rational policy.

Ethics and Reason

Some 40 years have passed since *Bambi* and the "infamous massacre of '43." Has rationality made any progress? It is doubtful. In the intervening years, the *Bambi* message has burgeoned. The African missionary, Albert Schweitzer, has been discovered and virtually canonized by a group of untrained but enthusiastic "ecologists." This is unfortunate, because Schweitzer's ideas solidified long before the modern theory of game management was established. Says Schweitzer:

> Ethics . . . consists in this, that I experience the necessity of practicing the same reverence for life toward all will-to-live, as toward my own. Therefore, I have already the needed fundamental principle of morality. It is good to maintain and cherish life; it is evil to destroy and to check life. . . .
>
> [Speaking of the "really ethical man"] If he works by lamplight on a summer evening, he prefers to keep the window shut and to breathe stifling air rather than to see insect after insect fall on his table with singed and sinking wings. If he goes out into the street after a rainstorm and sees a worm which has strayed there, he reflects that it will certainly dry up in the sunshine, if it does not quickly regain the damp soil into which it can creep, and so he helps it back from the deadly paving stones into the lush grass.[6]

While a touching passage, it ignores all considerations of the numbers of organisms relative to the quantitative limits of the environment; and it ignores the threat of Malthusian population growth to the animals themselves. As ethics it is useless. The ethics that we need are the ethics of Prometheus, literally "the fore-thinker"—ethics that

[6]Tom Regan and Peter Singer, eds., *Animal Rights and Human Obligations* (Englewood Cliffs, N.J.: Prentice-Hall, 1980), pp. 133–34.

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consider the consequences of actions before pronouncing them either good or bad.[7]

Another trend in thinking has helped to undermine rational analysis since 1943. This is the efflorescence of the idea of "rights," an idea that focuses on the individual and is practically blind to the interests of the group, including posterity. In the last 40 years we have witnessed the invention of women's rights, gay rights, the rights of the handicapped, the rights of aliens, and even animal rights.[8] Whatever the individual merits of these movements, their underlying philosophy emphasizes the demands of the individual and disallows the claims of the community. In other words, today preempts tomorrow.

The atmosphere of radical individualism is unfavorable to the rational discussion of the problems of wild horses and burros. The total lack of understanding of the principles of game management is mirrored in this statement made by a social activist: "Ironically, today's ecology enthusiasts do not seem to like living things. Life must be limited, they say, else it will destroy itself."[9] The irony is that the author has unwittingly given a correct epitomization of the ecological insight. Since every species of organism has the Malthusian potential of "eating itself out of house and home," individual lives must be limited by some countervailing force—human or other—or the life of the species will self-destruct.

The preeminent importance of carrying capacity has been beautifully brought out by David Klein's study of reindeer on St. Matthew's Island in the Bering Sea.[10] Until 1944, this island was uninhabited by vertebrates. In that year, for some reason, 24 female and five male reindeer were released on the island, where there were no predators and an abundant supply of reindeer moss for them to feed on. In 19 years time, the population increased to some 6,000 animals, a yearly increase of 33 percent. In the heavy winter snows of 1963, virtually the entire population died. In 1966, only 42 animals were found on the island, only one of which was male, suspected to be sterile. Presumably the population has died out since then.

It would be a mistake to presume that winter weather was the cause of the deaths; weather was only the *coup de grace*. Game

[7]Garrett Hardin, *Promethean Ethics: Living with Death, Competition and Triage* (Seattle: University of Washington Press, 1980).

[8]Special Issue on Animal Rights, *Inquiry* 22 (1979): 1–251; and Peter Singer, *Animal Liberation* (London: Jonathan Cape, 1975).

[9]Robert Chrisman, "Ecology: A Racist Shuck," *Scanlan's* 1 (1970): 46–49.

[10]David R. Klein, "The Introduction, Increase and Crash of Reindeer on St. Matthew's Island," *Journal of Wildlife Management* 32 (1968): 350–67.

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management studies of St. Matthew's Island led to an estimated carrying capacity (for reindeer) of five animals per square kilometer. In 1957, there were only four animals per square kilometer. These animals were about 50 percent greater in body weight than the mainland domestic reindeer, attesting to their good food supply. By 1963, the population had reached a density of 18 per square kilometer, or 3.6 times the estimated carrying capacity. At this time the average body weight of the island animals was less than that of mainland animals, and their environment showed distressing signs of overgrazing. The herd entered the winter season in bad condition. It would be far closer to the truth to say that the animals died of overpopulation than to say that they died of a severe winter.

How would a game manager in complete possession of the facts and fully empowered to act have managed the St. Matthew's herd of reindeer? Assuming that it was out of the question to introduce an effective predator into this simplified environment and assuming that contraception among reindeer was not practicable, the manager would have instituted a killing program in 1957, when the population size was comfortably below the carrying capacity and the animals showed every sign of being in good health. By always keeping the population below the carrying capacity—the engineer's "safety factor" must rule here—the animals could have been maintained in good health indefinitely, without the massive die-off that occurred in the winter of 1963–64. The Schweitzers of this world cannot agree to such systematic culling of a herd; but the Schweitzers would, if given power, increase the total amount of suffering. They would, in fact, extinguish the very life they intend to preserve.

Not many of the general public know of Klein's study or understand its moral. In March 1979, television carried a documentary prepared by the National Geographic Society. "Last Stand in Eden" was an account of the large herds of elephants which have moved into the highlands of Kenya, where they are pillaging the farms. Understandably, the native human beings whose livelihood is threatened want the herds thinned. The film showed helicopters driving the elephants away from populated areas into the wilder areas they had come from. Also shown was the rapid adjustment of the elephants to the new stress of helicopter noise. Very soon the herds started moving back from the wild into the inhabited areas. It was obvious what was happening: The wild areas had been damaged by numbers of elephants that were vastly larger than the carrying capacity. The elephants knew what was wrong and insisted on returning to more favorable areas, despite all the racket that human beings could make. There were film clips of government game managers calling for

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"understanding" and "patience" until the elephants could be "persuaded" not to return to the farming areas. Some speakers expressed horror at the thought of killing the elephants. One brief interlude showed the killing of more than 100 elephants in Ruwanda several years earlier, presented to underscore the "unthinkability" of killing. There was absolutely no mention of the concept of carrying capacity, nor of the necessity of considering quantities and consequences in arriving at ethical decisions. When a conscientious public educator like the National Geographic Society does so poorly, are we to wonder that the public understands so little of the biological basis of population well-being?

Closer to home, on Angel Island in San Francisco Bay, there is a herd of 150–200 deer, a number clearly beyond the carrying capacity of the island. Naturally, shooting the excess is "unthinkable." Bearing that in mind, Dale R. McCullough, professor of Resource Management at the University of California at Berkeley, recommended that a few coyotes be released on the island to bring the deer population to carrying capacity. Predictably, a representative of the San Francisco Chapter of the Society for the Prevention of Cruelty to Animals objected: "We are concerned with the way the animal dies. . . . We are concerned in a major way with finding a solution. We favor relocating excess deer. We do not want to see a slaughter of Angel Island deer, whether by man himself, or through a man-made solution such as introducing predators."[11] Relocation is, of course, only an escape from rationality. It may work for a while, but soon the areas available for relocation will be saturated, and then what does one do? In the end, there is no escaping the reality of carrying capacity.

How could so obvious a matter be so easily lost sight of, so persistently repressed? I suspect part of the answer is to be found in a remark made by E.F. Schumacher: "The people who now control our destiny almost universally have a city orientation."[12] Over 90 percent of the U.S. population is urban (living in cities of 50,000 or more), and most urbanites have had an urban upbringing. In the nature of things, urban people have most of the political power, and their interests determine the flavor of the rhetoric of most newspapers and magazines. People who are brought up on farms or ranches have a gut-level understanding of carrying capacity, whether they know the technical term or not; but it is difficult to bring their rural insights to bear on the problems of managing animals. As fewer and fewer

[11]UPI, *Santa Barbara News-Press*, March 11, 1981, p. C–13.

[12]E.F. Schumacher, "Interview," *Mother Earth News*, November 1976, p. 15.

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decision makers come from a rural background, the situation will get worse. We have a frightening education problem on our hands.

Managing Wild Herds

It is against this background that I want to consider the dispute between stockmen and so-called animal lovers over the burgeoning populations of burros and horses. At the risk of making enemies of both groups, one criticism can be leveled against both—not against every member but against many in each camp.

The "animal lovers" accuse the stockmen of being greedy when they seek to increase their domestic herds at the expense of the wild ones. No doubt the charge of greed is sometimes justified; but wildlife advocates can be equally greedy, although in a different way. Propagation by nature is over-abundant, necessarily so because reproduction must allow for deaths by accidents, disease, and predation. When man does not intervene and mitigate the corrective feedback of the forces of mortality, the exuberance of reproduction causes no problems. But the more sentimental of our wildlife advocates would eliminate all mortality if they could, because "all life is sacred" or because they feel a "reverence for life." To repeat, the biologist must point out that it is quite possible to defend the life of every species without preserving the lives of all its members. The "animal lover" does not like to have this truth pointed out. Extending John Locke's emphasis on the primacy of the individual to the nonhuman realm, the "animal lover" points out that every wild organism is genetically unique, and he is horrified at the thought of giving up the life of even one individual. His unwillingness is an expression of greed. The moralistic language of such advocates may fool us for a while, but in the end we see that the wildlife enthusiast who wants to save every wild life is as greedy as the stockman who wants to eliminate every living wild thing. The public interest here, as always, lies in a balancing of competing goods, in pursuing the Greek goal of moderation, and in resisting the call of greed, coming from whatever quarter.

This analysis may be viewed by some as an *ad hominem* argument. Transcending this level we can usefully divide the problem of managing the herds of wild horses and burros into a scientific part and a policy part. On the scientific side, we need to determine the carrying capacity of each piece of land. This means not only the carrying capacity for horses and burros but also for whatever other animals might be placed there alternatively or additionally, such as sheep, cattle, and deer. Their comparative demands on the environment can

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be stated in AUs, animal units, though the AUs may vary with different environments. Interactions between the species—e.g., the spoilage or augmentation of the environment for one species by another—must also be considered. Such questions may be difficult in detail, but they are scientific in principle. Given enough time, money, and study, the answers can be found. With these answers, we can then take up the second kind of question.

Policy is involved the moment we try to agree on the mix of grazers and browsers to strive for. Of course, we might take an exclusively homocentric position and opt for the maximum efficiency, which might mean the maximum number of pounds of beef produced per acre. Such a narrow definition would have been readily accepted a century ago, but not now. The 1976 Federal Land Policy and Management Act mirrors widespread public sentiment when it defines multiple use as "the management of various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and *not necessarily to the combination of uses that will give the greatest economic return or greatest unit output*" (emphasis added).[13]

Rejecting the pure efficiency solution makes the political problem much more difficult, of course. But if you believe, as countless millions of Americans do, that quality of life is to be measured by more than mere economic efficiency in the narrow sense and that a modicum of variety and wildlife is required for human happiness (even if it means that the carrying capacity of our land for human beings is thereby reduced), then the political problem of battling over alternative value systems cannot be evaded. He who prefers quality to quantity has a fight on his hands.

Under every value system the problem of eliminating excess animals arises—either once only in the case of an efficiency solution or periodically if we opt for a steady state or balance of competing herbivores. Keeping herds of domestic animals within their assigned limits requires solving the problem of managing the ranchers; that is, persuading ranchers that it is in their long-term interest to cooperate with other elements in society. The experience of the last half century in the management of the common lands under the jurisdiction of the Forest Service and the Bureau of Land Management has shown that this is no small political problem.

Keeping herds of wild animals within their assigned limits requires, first of all, that these herds be managed using various means, for

[13]Jay D. Hair, "Sagebrush Rebellion," *BioScience* 31 (1981): 556.

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example: treating them as game animals and managing the assignment of hunting rights; cropping the herds for either human or animal food; poisoning animals as a simple means of getting rid of them; exporting some animals to other areas, which is only a temporary solution; introducing natural predators, which probably will not be approved of; or, as a bit of science fiction, forcing animals to practice birth control. Given the goal, the comparative costs and benefits of these methods can be evaluated scientifically.

Guilt vs. Rationality in Policy Espousal

Beyond the problem of managing the animals, there is the problem of managing the city folk who object to the management. This may be the most difficult control problem of all. A large literature has been built up around the ideas of compassion, sanctity of life, reverence for life, pro-life, and other verbalizations, the implication of which is that people who support so-called pro-life positions are somehow nobler than those who would match population size to carrying capacity. We must not underestimate the bias in favor of the pro-life position. The problem of minimizing the suffering of the world will be made immensely easier if we can build backfires against this position. This will not be easy, but I have a suggestion.

Returning to Schweitzer, I quote: "The ethic of reverence for life . . . inspires us to join in a search for opportunities to afford help of some kind or other to the animals, to make up for the great amount of misery which they endure at our hands, and thus to escape for a moment from the inconceivable horrors of existence."[14] I speak certainly for myself, and I think for millions of others, when I say that I really do not know what Schweitzer is talking about when he speaks of the "inconceivable horrors of existence." All biologists are certain that no one ever "promised us a rose garden"—but what's new? Death and tragedy are ubiquitous, but not universal. We cannot make the world wholly as we would like it to be, but we can bias it in our favor. We have the best chance of succeeding in this endeavor if our actions are guided by rationality.

I am afraid that it is rationality itself that is most feared by many of those in the pro-life camp. Guilt-mongering is an all too common hobby. The attraction of this occupation has, I think, been revealed by psychiatrist Leslie Farber: "Guilt is welcomed simply as a meaning, one of the handiest of familiar meanings, to get us out of chaos."[15] By contrast, biologists find meaning in such rationally understanda-

[14]Regan and Singer, p. 138.

[15]Leslie H. Farber, "The Therapeutic Despair," *Psychiatry* 21 (1958): 7–20.

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ble concepts as exponential growth, the finiteness of resources, negative feedbacks, predation, mathematical maxima, safety factors, competition, and carrying capacity. The biologically minded ethicist insists that time and numbers must enter into ethical calculations. Consequences are important; hence, Promethean ethics. Rational calculations may be difficult to carry out, but in principle they are possible. In time, our answers should improve.

Those who reject rationality and yet who seek meaning as avidly as rationalists do are likely to fall back on guilt as a philosopher's stone for solving ethical problems. After two millenia of intermittent guilt addiction, it should be obvious that guilt is a poor explainer of the phenomena of the world. We cannot, to use Schweitzer's words, "make up for the great amount of misery which animals endure at our hands" by regarding the life of every animal as sacred, if such sanctifying action results in increasing still further the misery of wild animals under our control. Only rational policies can minimize suffering in the future.

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PROPERTY, FREEDOM, AND THE SURVIVAL OF WILD HERDS

John W. Sommer

Carrying Capacity and Survival

In his paper, "Sentiment, Guilt, and Reason in the Management of Wild Herds," Garrett Hardin warns us to beware of "a group of untrained but enthusiastic 'ecologists' " who seek to canonize Albert Schweitzer's pro-life message as applied to wildlife, while ignoring nature's carrying capacity.[1] Disregarding rational game-management principles, these pseudo-ecologists would enlist the power of government to force their pro-animal life views on the public.

Hardin tells us that in the early 1940s, Aldo Leopold made the mistake of destroying the predators of wild deer in Wisconsin. Later he was compelled to kill thousands of deer in the "infamous massacre of '43." The public reacted with anger, but failed to recognize the reason for the massacre: disregard for the "primacy of carrying capacity" by "pro-life" naturalist groups.[2] This same naiveté regarding carrying capacity and survival of wildlife dominates public opinion today. Witness, for example, the public's anger in Florida and Maine when wildlife biologists recommended increased hunting of deer and moose, even though the purpose of this recommendation was to preserve the stocks of these animals *in the long run*.[3] The same experience applies to the management of wild herds of horses and burros, where groups such as the Friends of Animals, Defenders of

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[1]Garrett Hardin, "Sentiment, Guilt and Reason in the Management of Wild Herds," *Cato Journal* 2 (Winter 1982): 826.

[2]Ibid., pp. 824–826.

[3]Drive Underway to Block Deer Season in Everglades," *New York Times*, July 13, 1982, and "2nd Moose Hunt in Maine Prompts Efforts for Ban," *New York Times*, April 4, 1982.

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Wildlife, and the Natural Resource Defense Council have refused to advocate sound game-management principles. Instead, they simply call for *universal* non-injury of animals.

Unlike the pro-animal life groups, serious biologists like Hardin recognize that the survival of a species, not the loss of individual animal life, is what is important. Thus, Hardin advocates a Promethean ethic that views actions in terms of their consequences, rather than a Jainist-type ethic that views animal life as good in and of itself.[4] The fact that nature is niggardly cannot be denied without serious consequences. Moreover, rationality requires that we view animals as resources to be used for the satisfaction of human wants, including enjoyment of animals as pets. Outright cruelty to animals, of course, can never be condoned, and certain laws may be necessary to protect animals from inhumane treatment. But we should not forget that in a free society, organizations like the SPCA will emerge to protect animals from inhumane treatment, without the intervention of the state. Such voluntary action, however, contrasts sharply with the desire of wildlife groups to impose their Jainist-type ethic on the public via extensive government regulation of land use.[5]

In the next section we shall consider the ways in which animals, including wild horses and burros, can be regarded as resources, and the implications for land use and development. We shall then discuss how privatization of animal resources will provide owners with a strong incentive to maintain and improve their stocks of wildlife vis-à-vis common ownership and public management.

Animals as Resources

If we are to think of animals as resources and if we are to blunt the arguments of animal-rights enthusiasts, we need an argument of greater logical merit than provided in Genesis 1:26 concerning God's grant to man of dominion over animals. I have not constructed the needed arguments yet, but Robert Nozick has raised enough questions about the utilitarian position to make me look elsewhere. Nozick urges us to think our way through the animal-resource-use question when he asks: "Are there any limits to what we may do to animals? . . . . Do some purposes fail to entitle us to impose great costs on animals? What entitles us to use them at all?"[6] Even with these questions in mind, the dominant ethic with respect to animals is largely utilitarian, although it is a tempered form of utilitarianism.

[4]Hardin, pp. 826–827.

[5]See John W. Sommer, "A Beastly Geography," *Ontario Geography* 9 (1975).

[6]Robert Nozick, *Anarchy, State and Utopia* (New York: Basic Books, 1968), p. 35.

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We agree that animals may be used for certain purposes, but we are reluctant to allow an open-ended choice. Perhaps this is so because we realize that the malicious treatment of animals would be a step backward for civilized people: Outright cruelty to animals may spill over into less respect for *human* life. In addition, deep down we may have an affinity with animals, so that we may believe with William Morton Wheeler that animals are "our only companions in an infinite and unsympathetic" universe.[7]

If animals are regarded as resources, two questions come to mind: In what way are wild horses and burros, as well as other forms of wildlife, resources? And, under what institutional arrangement may we be most likely to maximize their value to us?

Before 1959, wild horses and burros were sought chiefly for mounts, hides, animal food, and animal products like glue; they were also used occasionally for human food. These animals were not protected by the states because they were not game animals. However, in 1959, a federal law was passed making it illegal to hunt or harass these animals on public lands, or to pollute their watering holes "for the purposes of trapping, killing, wounding or maiming."[8] According to Michael Bean, this law was largely ineffective and it was not until 1967 that the Bureau of Land Management effected a "wild horse policy," which hardly had time to be tested before Congress enacted the Wild Free-Roaming Horses and Burros Act in 1971.[9] This law dictated that wild horses and burros be designated as "living symbols of the historic pioneer spirit of the West," and treated "as an integral part of the natural system of the public lands."[10]

The spirit of the law is illustrated by the following passage from the Senate report that accompanied the bill:

> They [wild horses and burros] have been cruelly captured and slain and their carcasses used in the production of pet food and fertilizer. They have been used for target practice and harassed for "sport" and profit. In spite of public outrage, this bloody traffic continues unabated, and it is the firm belief of the committee that this senseless slaughter must be brought to an end.[11]

[7]Joseph Wood Krutch cites Wheeler in the preface to James Fisher, Noel Simon, and Jack Vincent, *Wildlife in Danger* (New York: The Viking Press, 1969), p. 11. Also, see C. G. Jung, *Memories, Dreams, Reflections*, Aniela Jaffé, ed. (New York: Vintage Books, 1963), p. 101.

[8]18 U.S.C. sec. 47 (1970), cited in Michael J. Bean, *The Evolution of National Wildlife Law* (Prepared for the Council on Environmental Quality by the Environmental Law Institute, 1977), p. 105.

[9]Bean, p. 104.

[10]16 U.S.C. sec. 1331, suppl. IV (1974), cited in Bean, p. 104.

[11]S. Rep. No. 242, 92nd Cong., 1st sess. 1 (1971), cited in Bean, p. 104.

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Such a statement is ironic when one considers how important game hunting is to the economies of a number of Western states. It can hardly be argued that game animals are less subject to "cruel capture," harassment, or death than wild horses and burros. These latter animals apparently have become more important than other animals in the eyes of the law. The 1971 Act also had the curious effect of elevating the status of wild horses and burros over that of their domestic counterparts: They receive the full protection of the law if they venture onto private lands and may only be removed by federal personnel, which, given the checkerboard pattern of public and private ownership in the West, can keep the authorities very busy. Finally, the federal government protects all unbranded horses and burros on public lands, including those who have strayed from private lands.

These outcomes of public management aside, the interesting matter of definition remains. The Act may, in fact, get at what most of us regard as the raison d'etre for these animals: *to exist as wild, free-roaming creatures.* It may be precisely because the great majority of Americans are urban dwellers that there is an urge to have "living symbols" of the Wild West.[12] Nevertheless, government exhortations to preserve wild herds and regulations to impose the will of conservationist groups on the general public are poor substitutes for private ownership and management. If individuals really want to have "living symbols" of the wilderness, the market will provide them much more efficiently than the state.

According to Hardin, what we must do to preserve our wildlife is "to replace the unmanaged commons with a responsible system."[13] Having said this, however, he seems to retreat to a system of scientific management by biologists, instead of a system of private ownership. It seems Hardin would have biologist-planners determine the carrying capacity of land in "animal units," and then use cost-benefit analysis to determine the optimal land-use pattern for preserving wild herds.[14] In this regard, it is interesting to note that for over 20 years Hardin has flirted with the free market, only to back away at the last instant in favor of fine-tuning the economy via some form of planning. He hesitates to adopt a truly free-market perspective because

[12]Steven Kellert at Yale University's School of Forestry has been assessing American attitudes toward wildlife and may shed light on this issue.

[13]Hardin, p. 824.

[14]Ibid., pp. 830–832.

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he does not want to "add to the double battery of polemic literature."[15]

Even though Hardin's research points toward the benefits of private ownership and a competitive price system to guide resources to their highest-valued uses, his biologist instincts direct him away from the spontaneous order of the market toward a scientific rationality—a type of rationality Hayek has referred to as "constructivism."[16]

Private Ownership, Freedom, and Survival

Private ownership protects individual freedom of choice, and this enables a diverse pattern of wants to be satisfied. However, only those wants that are most urgent and that can be satisfied at least cost will survive in the competitive market process. There is no reason to doubt that this same competitive market process if applied to wild herds would generate a socially desirable outcome. Under the discipline of profit and loss, wild herds would not disappear, provided the public was willing to pay for their use, whether it be for their use as "living symbols" of the wilderness or for other uses. The important point is that individual consumers would be voting their preferences in the marketplace, instead of government officials and wildlife groups dictating what is "good" for consumers. Those individuals who would canonize the pro-animal life message or replace a free-market system with scientific planning should at least look at the private alternatives to government regulation of wildlife.

In a democracy, majority rule enables the "winners" to impose substantial costs on the "losers" via the tax system. Wildlife groups can form effective coalitions to enact their special interest legislation even though they form only a small part of the voting public. Under such a system, politicians have an incentive to heed minority interests even though they may be extremist. The benefits from the legislation will be concentrated on the wildlife groups, while the costs will be widely dispersed, making the support of such legislation politically feasible. Therefore, the rational among us will always seek majority coalitions to establish rules that directly benefit us *at the expense of other taxpayers;* yet we will pretend to lobby in the "public interest."

[15]Hardin, "The Cybernetics of Competition: A Biologist's View of Society," in Paul Shepard and Daniel McKinley, *The Subversive Science* (Boston: Houghton-Mifflin, 1969), p. 294.

[16]F. A. Hayek, "Kinds of Rationalism," in *Studies in Philosophy, Politics, and Economics,* Midway reprint ed. (Chicago: University of Chicago Press, 1980), pp. 84–85.

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As Hardin has shown, men of conscience make little headway in a common property environment.[17] It is no secret that as individuals are made less responsible for their actions, their behavior will become more reckless. Consequently, further government regulation will be called for, and the market coordination system will be further eroded. In the process, resources will be wasted by those groups seeking privileged positions. Instead of government rules and regulations governing the use of common resources, we need to establish private property rights and a rule of law approach to government.[18] By limiting government action to the protection of person and property, we can allow the market price mechanism to effectively coordinate human action, and maximize individual freedom.[19]

How do wild horses and burros fit into this analysis? The responsible and optimal arrangement for wildlife is private ownership. Under such an arrangement, wild herds have the best chance of long-run survival. Moreover, such an arrangement satisfies Hardin's requirements for survival of a *species* and for emphasizing carrying capacity.[20]

Evidence is mounting concerning the efficacy of private property in conserving wildlife. John Baden, Richard Stroup, and Walter Thurman have cited the historical evidence surrounding the Montagnais Indians and the beaver pelt trade;[21] R.J. Smith has examined the case of private turtle farms in the Cayman Islands;[22] and Clifford May has studied game cropping in East Africa.[23] In Texas, where there is little federal land, hunting is permitted through private contract lease arrangements, and game-management practices are widely employed, since the owner can capture the profits from his efficient investment decisions. Exotic game ranches have also been created to appeal to hunters worldwide. These ranches have helped to preserve species (Grebe's zebra, for example) and to restock territories where animals had been virtually eliminated (the oryx in southern Arabia).

[17]Hardin, "Living on a Lifeboat" (1974). Reprinted in Garrett Hardin and John Baden, eds., *Managing the Commons* (San Francisco: W. H. Freeman, 1977), pp. 264–265.

[18]On the rule of law, see Hayek, *The Constitution of Liberty*, Gateway ed. (Chicago: Henry Regnery Co., 1972).

[19]See Ludwig von Mises, *Human Action* (Chicago: Henry Regnery Co., 1966).

[20]See Hardin, "Sentiment," p. 830

[21]John Baden, Richard L. Stroup, and Walter Thurman, "Good Intentions and Self-Interest: Lessons from the American Indian," in *Earth Day Reconsidered*, John Baden, ed. (Washington, D.C.: The Heritage Foundation, 1980), pp. 9–11.

[22]R. J. Smith, "Resolving the Tragedy of the Commons Through Property Rights," *Cato Journal* 1 (Fall 1981): 439–468.

[23]Clifford D. May, "Preservation for Profit: New Strategies to Save Africa's Wildlife," *New York Times Magazine*, September 12, 1982.

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There is no question that these private arrangements would fail the ethical test of the animal-rights extremists, because individual animals are sacrificed to save the species. However, under private ownership, those individuals who wanted to protect individual wildlife could do so at their own expense. For example, Cleveland Amory, an animal-loving philanthropist, had wild burros air-lifted by helicopter from the Grand Canyon National Park, at his expense, when Federal Parks officials were prepared to annihilate them. In a more ambitious, if less spectacular effort, the Noble Foundation transformed St. Catherine's Island into a wildlife refuge in the early 1970s. Still grander in scale is the Nature Conservancy's acquisition of nearly two million acres of land, chiefly in North America, for preserving wildlife and environmentally sensitive areas. These examples—and there are many others—offer strong evidence that market solutions can emerge to preserve wilderness values.

Conclusion

If we disregard scarcity and the carrying capacity of land, human survival will ultimately be impaired. Reason must predominate over emotion if animal as well as human life is to be preserved. In these respects, we can agree with Hardin. But we must go further and call for the establishment of private property rights in wildlife. Such an alternative is necessary if individual freedom is to be preserved, and if animal life is to serve man's wants in an efficient and acceptable manner. Under private ownership, wild herds will find their highest-valued uses to individual consumers. Private owners will behave in a socially responsible way, because it pays them to do so. This is in contrast to the system of public ownership and control that encourages the ultimate destruction of wild herds, because no one can be held accountable for such destruction. Surely Hardin would not disagree with this assessment.

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IS "SUPPLY-SIDE ECONOMICS" ENOUGH?

Karl Brunner

The Question and the Answer

My answer to the question—Is "supply-side economics" enough?—is simply that it is both too much and too little. This paper will elaborate the sense in which "supply-side economics" is an exaggerated answer to current economic problems, and the sense in which it falls short of providing an adequate solution to our economic ills. I shall contend that "supply-side economics," *as defined by the media and a small group of propagandists,* lacks the consistent analytical framework necessary to provide effective solutions for our socio-economic problems. On the contrary, "supply-side economics" has contributed to the tactical difficulties encountered by the Reagan administration in executing its economic program. My assessment of "supply-side economics" is based on an examination of the problems we have inherited from past economic policies, and on the answers to these problems suggested by sound economic analysis.

The Inheritance

The period from 1950 to 1980 exhibits two very different phases. Over the first 15 years inflation was systematically contained. Output and employment increased at a healthy pace, and there was no sign of the dreaded stagnation widely expected at the end of World War II. The high point of this period was the subperiod 1960–1964, characterized by an essentially stable price level, stable and low interest rates, and steady economic growth.

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The pattern changed with remarkable force over the second phase of the postwar period. During the years 1966 to 1980, we drifted into a permanent inflation with erratic and high levels of interest rates. The system of fixed exchange rates erected at Bretton Woods collapsed and the dollar declined relative to most major currencies. Moreover, even though employment was growing, the average level of real growth fell substantially below the norm prevailing for many years. And the normal rate of unemployment rose gradually over time. Shifting conditions beyond policy may have shaped to some extent this evolution. Whatever these conditions may have been, the change in monetary, fiscal, and regulatory policies occurring over the postwar period crucially determined the difference between the two such periods. It became inceasingly clear that our policymaking required a new direction. "Supply-side economics" appeared in the media and political markets in response to the inherited problems. Unfortunately, it offered at best only a partial answer and actually obscured important issues.

Supply-Side Doctrine

The views characterizing "supply-side economics" emerged from the interaction between the media and a small group of advocates (Arthur Laffer, Jude Wanniski, Paul Craig Roberts, Alan Reynolds, and Robert Bartley), who found a powerful voice in Congress (Jack Kemp).[1] Some members of this group are not economists and know little economics. Some have a degree in economics, but none have a strong record of professional work. Indeed, their disinterest in academic work is compensated by their preference for demogogic exercises in the media and political arena. These facts need emphasis because the media has presented "supply-siders" as a major intellectual and revolutionary force in economics. Such a characterization has affected members of the intelligentsia and social scientists unfamiliar with economic history and analysis.

The basic doctrine accepted by "supply-siders" can be summarized as follows. A lower tax schedule and, especially, a lower slope of the tax schedule is a *necessary* and *sufficient* condition for economic recovery. "Supply-siders" claim that such a tax policy will increase real economic growth, eliminate inflation, and eventually lower government expenditures. They reason that lower effective marginal tax rates raise the willingness to work, save, and invest.

[1]The emergence of "supply-side economics" is treated in Paul Blustein, "Supply-Side Theories Became Federal Policy with Unusual Speed," *Wall Street Journal*, October 8, 1981, pp. 1, 16.

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Indeed, they claim that the incentive effect of lower tax rates will be so strong that within one or two years output will grow *persistently* at record levels, greatly enlarging the tax base.

"Supply-siders" expect the large increases in economic growth, *assumed* to result from tax-rate cuts, to reduce the rate of inflation "without any tears" and without any recession. Lastly, "supply-siders" believe that the energies unleashed by lower tax rates will reduce the growth of social welfare expenditures. They claim that the revolution in output growth, brought about solely by tax policies, will raise living standards to such an extent that social welfare programs will become increasingly unnecessary. Thus, whatever the initial size of the federal deficit, it is forecast to ultimately disappear under "supply-side economics."

Economic Analysis and "Supply-Side Economics"

Contrary to suggestions emerging from the media and the intelligentsia, the basic tenets of "supply-side economics" have a long history, dating back to Adam Smith.[2] In particular, the "classical economists" emphasized the importance of low tax rates for economic growth. It was not until the "Keynesian abberation" that economists and policymakers began to neglect important supply-side responses to changes in relative prices, occasioned by tax and regulatory policies. In this regard, it is worthwhile to recognize that the Keynesian emphasis on demand management, which overlooks the array of incentives and disincentives operating on the supply side, does not represent the core of economic analysis.

Certain economists writing in the 1950s and early 1960s recognized the weaknesses inherent in the Keynesian macroeconomic approach to policymaking. These economists sought to return economic policy to its microeconomic foundations. Arnold Harberger, in particular, conducted important studies on the efficiency losses caused by various taxes.[3] He sought to minimize the excess burden of the tax system by selecting those taxes that have the least distortive

[2]For a historical treatment of supply-side theory, see Robert E. Keleher and William P. Orzechowski, "Supply-Side Effects of Fiscal Policy: Some Historical Perspectives," Working Paper Series, Federal Reserve Bank of Atlanta, August 1980.

[3]See especially, Arnold Harberger, "Taxation, Resource Allocation, and Welfare," in *The Role of Direct and Indirect Taxes in the Federal Revenue System* (Princeton, N.J.: Princeton University Press for the National Bureau of Economic Research and the Brookings Institution, 1964); "The Measurement of Waste," *American Economic Review*, May 1964, pp. 58–76; and "Corporation Income Taxes," in *International Encyclopedia of the Social Sciences*, vol. 15, part III (New York: Crowell Collier, 1968), pp. 538–545. All three articles are reprinted in his book *Taxation and Welfare* (Boston: Little, Brown & Co., 1974).

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effects on relative prices and economic behavior. Thus, the range of incentive/disincentive effects produced by fiscal policy via supply-side effects forms a well-established body of economic analysis. One need only examine any contemporary public finance textbook to discover this fact.

In contrast, the assertions of "supply-siders" moved well beyond the acceptable arguments provided by traditional economic analysis. Besides overstating the supply-side effects of specific taxes, the "supply-siders" omitted important supply-side effects from their analysis. In so doing, they offered the public a wildly exaggerated and seriously incomplete answer to our inherited economic problems.

One of the "supply-siders' " most serious omissions has been their lack of attention to the supply-side effects of expenditure programs. The trend in unemployment cannot be adequately explained by changes in marginal tax rates, since it was conditioned by the interaction between tax rates and specific federal spending programs. "Supply-siders" seem only to have focused on the incentive effects of tax policies, while ignoring the level and composition of federal expenditures. As such, they have conveyed a faulty sense of the real burden imposed by the government's fiscal operations.

Another serious flaw of "supply-side economics" is revealed by the "supply-siders' " claim that the output effects of tax reductions will naturally shrink the public's demand for social welfare programs. This assertion fails to recognize the peculiar combination of incentives and disincentives characterizing these programs, and their effect on the use of resources. Most importantly, this assertion exhibits a remarkable naïveté concerning the nature of the political process shaping these programs.

The exaggerations advanced by "supply-siders" have centered around the output effects alleged to result from reductions in tax rates. "Supply-siders" project a rate of real growth substantially exceeding past growth rates, without any modification in expenditure programs and regulatory policies. Such projections have no sound analytical basis and cannot be supported by past experience. Similarly, the "supply-siders' " contention that inflation can be curbed without holding monetary growth to a low level cannot be supported either in theory or fact. Even so, Congressman Kemp continues to claim that inflation can be overcome at little (or no?) social cost by radical reductions in tax rates and a massive monetary expansion.[4]

[4]Representatives Jack Kemp (R-N.Y.) and Trent Lott (R-Miss.) recently (September 1982) introduced a bill to change the focus of monetary policy from targeting the growth of the money supply to targeting real interest rates. Their bill, the "Balanced Monetary Policy and Price Stability Act," if implemented, would undoubtedly lead to excessive monetary growth and accelerating inflation.

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Beyond "Supply-Side Economics"

"Supply-side economics" suffers as an answer to our inherited economic problems because it fails to address the pattern of policy-making increasingly exercised over the past decades by Congress, the bureaucracy, and the courts. This pattern produces an ever-expanding growth of the state with an increasing range of social coordination by means of political institutions. In this context, the fine-tuning of economic policies characterizing a Keynesian tradition is but a special case of the general trend observed in Western nations. Meanwhile, the budget battle reflects a protracted conflict over the future shape of our society. The outcome of this battle will determine whether man will live under the tyranny of an unlimited government or in a society in which government is limited by a new constitutional consensus expressed by specific institutional arrangements.

The "institutionalization" of monetary and fiscal policy, discussed in the President's 1982 *Economic Report*, prepared by the Council of Economic Advisers, describes some aspects of the fundamental issues confronting us. Neither "supply-side economics" nor "supply-side policies" will solve the central problem of our time—the ever-expanding power of government. Our concern should be directed toward the creation of a stable and predictable institutional framework relying dominantly on markets for social coordination in order to effectively limit the government's activities. In particular, a new set of rules for the socio-economic game should be formulated, rules that prohibit the activist expansion and increasing exploitation by government officials of the political institutions in order to redistribute income and shift the control of economic affairs.

To effectively constrain government, we recommend the following policy actions:

1. *Monetary Control.*[5] The control and removal of inflation requires foremost an adequate and determined control over monetary growth. If relative prices are to perform their information and incentive functions effectively, there must be monetary stability so that erratic money does not upset economic calculation. A strategy of monetary control has traditionally been opposed by our Central Bank, and this tradition has contributed to the drift into permanent inflation. Monetary control seemed to have been accepted for a short while by the Federal Reserve authorities as a strategy to lower the rate of inflation.

[5]For a more detailed discussion of monetary control, see Karl Brunner, "The Control of Monetary Aggregates," in *Controlling Monetary Aggregates, III*, Proceedings of a conference sponsored by the Federal Reserve Bank of Boston, October 1980 (Boston: Federal Reserve Bank of Boston, 1981).

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But the tactical procedure remains inadequate and reinforces the market's uncertainty about the underlying monetary strategy. The Fed's recent policy was to target the various measures of the money supply, but the lack of any enforceable monetary growth rule means that the Fed can, in fact, pursue *any* money-growth target it desires. Such an institutional setting obviously breeds uncertainty, and the granting of such enormous power to an independent government agency is certainly not consistent with the principles of a free society. The Reagan administration has done little to change this feature of our economic system. Instead of pursuing the stable money growth called for at the beginning of the Reagan administration, the Fed's control of the money supply has been more erratic than ever. This monetary erraticism, in turn, has led to a wild gyration in interest rates and has made rational investment planning extremely difficult.

2. *Deregulation.* In order to stimulate economic growth, the government must significantly reduce its controls on market activities, and recognize the possibility of "government failure." Moreover, regulatory policies should weigh the social costs of regulation more systematically against the expected benefits. In the past, policymakers typically have ignored the burden imposed on society by regulatory programs. Consequently, regulation has obstructed the efficient use and productive development of our resources. A systematic reexamination of these policies and a move toward less regulation form an important component of any useful recovery program. President Reagan has called for less regulation and a more careful weighing of the costs and benefits of regulation. However, his administration has done relatively little to mitigate the adverse effects of regulation in such areas as trucking, airlines, natural gas, and numerous other areas.[6]

3. *Budget Constraints and Lower Taxes.* The expanding size, both absolutely and relatively, of our federal budget is our central problem. It creates incentives to use resources in the political process for the nonproductive, negative-sum games of redistribution. It creates large disincentives for the suppliers of labor, capital, and natural resources, and it produces serious distortions in the uses of our resources. Tax schedules and expenditure programs must both be substantially modified. Ultimately, the magnitude of the budget must be firmly controlled in order to change the incentives (or disincen-

[6]On the general regulatory climate under the Reagan administration, see Walter Guzzardi Jr., "Reagan's Reluctant Deregulators," *Fortune*, March 8, 1982, pp. 34–40. On transportation regulation, see Thomas Gale Moore, "Deregulation and Re-Regulation of Transportation," *Policy Analysis*, Cato Institute, Washington, D.C., July 8, 1982.

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tives) in a direction which will improve the use and future development of human and non-human capital.

We should clearly recognize at this stage that the general policies required for President Reagan's economic program are well founded in economic analysis. This is certainly true for monetary policy and the approach to regulatory agencies. It also applies to the budget. However, we must emphasize that the real burden of government is reflected by the size of the budget, not by the explicit tax burden. Moreover, we must remember that the effect of regulatory policies and court decisions on private actions is to add to the true cost of government. Regulatory agencies, for example, may have relatively small budgets, but their impact on economic freedom and allocational efficiency can be substantial.

In order to lower the real burden of government we need to trim and restructure expenditure programs. Government should return to its traditional role of safeguarding person and property. Individual responsibility is better fostered by private ownership rather than by government intervention, ever-expanding social welfare programs and "public control" over resources. "Supply-siders" like to ignore these hard facts, and in so doing distract the public's attention from the fundamental issue—shrinking the size of government. What we want is not to increase the revenue of government by cutting tax rates, but to limit spending and the power to tax so that the private market economy can once more function efficiently to produce what consumers want. With government spending at an all-time high as a percent of GNP, we cannot afford to engage in "supply-side" dreaming. The time for fundamental constitutional reform is upon us.

By adopting a legislated monetary rule, by relaxing economic regulation, by adopting a constitutional amendment limiting the size of government, and by restructuring the federal budget to focus once again on protecting person and property instead of a massive and open-ended redistribution, we can unleash the supply-side responses desired by "supply-siders," and generate a new burst of economic growth and well-being.

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REFLECTIONS ON SUPPLY-SIDE ECONOMICS

Morgan O. Reynolds

Introduction

According to Dr. Samuel Johnson, "Promise, large promise, is the soul of an advertisement." By this standard, the Reagan economic program had a lot of soul last year. Embracing the supply-side economics of Laffer, Wanniski, Kemp, and Stockman, President Reagan accepted the idea that lower tax rates alone could reinvigorate the economy, stop inflation, and even balance the budget by 1984. Under the guise of "supply-side economics," the American public had the impression that drastic budget cuts were not really necessary, nor would a recession occur. An omelette would arrive without breaking any eggs.

It all sounded too good to be true, and now an impatient public knows that it was too good to be true. Hard-headed academic economists never totally embraced the Reagan supply-side doctrine. Similarly, financial markets were sympathetic to supply-side arguments, but remained unpersuaded throughout an ardent courtship by the Reagan administration. Now it seems clear why: Inflation doesn't end without a recession as a serious side-effect; monetary policy is a powerful determinant of short-run fluctuations in economic activity; and federal spending, despite Reagan's valiant efforts, remains out of control. Markets were right and the intellectuals and politicians were wrong once again.

Understandably, many people, including some supply-siders, are disappointed and confused about the current contraction in economic activity. In the political arena, where influence is intensely psychological and time horizons very short, instant solutions and immedi-

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ately perceived success are all important. A truism of our age is that ideas have consequences and the danger for supply-siders, who gained the ear of politicians with such meteoric success, is the growing idea that supply-side economics is a failure. Supply-siders are learning that their influence can dissipate as quickly as it arose, especially if the dominant opinion emerges that supply-side policies do not expand total output, but merely confer tax benefits on the rich.

In their attempts to avert discrediting their doctrines, supply-siders have responded in a variety of ways. The most common is to assert that supply-side economics has not yet been tried, either because the cuts in tax rates just began taking effect, or because the cuts are not radical enough. As Richard B. McKenzie wrote, "Supply-side economics has not worked and will not work for one simple reason: it has not been and is not likely to be tried."[1] McKenzie, along with many others, argues that the bracket creep caused by inflation plus scheduled increases in social security taxes will not reduce marginal tax rates for most Americans over the next four years. Although these forecasts are necessarily speculative, the most careful estimates I have seen (displayed in Table 1) show that marginal rates for most taxpayers would be about equal to those of 1977, hardly a return to a low-tax era.

Another version of the view that supply-side economics has not been tried, an opinion with some factual foundation, is that the Reagan administration has not been able to reduce federal spending or taxation as a share of GNP, nor is there any strong evidence that it will succeed in reducing government's share by 1984. Federal spending as a share of GNP rose from 21.1 percent in 1979 to 22.9 percent in 1980 and to 23.5 percent in 1981, while federal tax revenues rose from 20.5 percent, to 20.6 percent, and to 21.4 percent of GNP during the same period.[2] Thus far the Reagan administration has ushered in a revolution in rhetoric but not in policies. The tax cut was similar to the five previous rate cuts during the 1960s and 1970s that almost neutralized the bracket creep inherent in the combination of a progressive tax structure and inflation. Defenders of "Reaganomics" claim that the indexing of the income tax to inflation, scheduled to begin in 1985, is the truly revolutionary part of the tax cut.[3] However, there is no guarantee that Congress will follow through with index-

[1]Richard B. McKenzie, "An Introduction to the Personal Tax 'Cuts'," *Wall Street Journal*, January 8, 1982, p. 22.

[2]Calculated from *Economic Report of the President, January 1982*, pp. 233, 320. The figures for 1981 are preliminary.

[3]"An Interview with Phil Gramm," *Pathfinder* 4 (Center for Free Enterprise, Texas A&M University, February 1982): 2.

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TABLE 1

Marginal Income Tax Rates
(percent)

	Income in Thousands of 1981 Dollars					
	$7.5	$15	$30	$60	$120	$240
Wage or Salary Income Only:						
1977	16	23	25	42	50*	50*
1978	16	23	28	42	50*	50*
1979	6	24	24	43	50*	50*
1980	19	24	28	49	50*	50*
1981	33	24	32	48	50*	50*
1982†	31	26	36	49	50	50
1983†	30	25	33	44	50	50
1984†	30	24	35	42	49	50
*Property Income** Only:*						
1977	0	17	25	42	55	66
1978	0	17	28	42	58	68
1979	0	18	24	43	59	68
1980	0	18	28	49	59	68
1981	14	18	32	48	64	70
1982†	12	19	33	49	50	50
1983†	11	17	28	44	50	50
1984†	11	16	26	42	49	50

SOURCE: "Where Are the Tax Cuts?," *Research Reports* 49, American Institute for Economic Research, Great Barrington, Mass., May 24, 1982.

Note: All data are calculated on the basis of a family of four with no itemized deductions and only one family member with earnings subject to Social Security tax.

*50 percent maximum tax on "earned" income. †Projected.
**Dividends, rents, royalties, short-term capital gains, and nominal interest.

ing, nor is indexing revolutionary compared with overindexation, which would shrink government's real revenues as the price level rose, nor compared with a flat rate tax. Another response to the supply-siders' floundering has been to insist on a return to a gold standard in which government guarantees convertibility between its currency and gold at a fixed price.[4] The political popularity of this proposal quickly peaked and eroded. A further response was Jack Kemp's call, echoed in parts of the Reagan administration, for Paul Volcker's dismissal as head of the Federal Reserve System and a

[4]Lewis E. Lehrman, "The Case for the Gold Standard," *Wall Street Journal*, July 30, 1981, p. 24; Jude Wanniski, "Supply-side Case for a Gold Standard," *Business Week*, December 7, 1981, p. 23F; Authur B. Laffer and Charles W. Kadlec, "The Point of Linking the Dollar to Gold," *Wall Street Journal*, October 13, 1981, p. 32.

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speeding up of the printing presses to bring down interest rates and stimulate recovery.[5]

The most recent supply-side proposal, riding a boomlet of popularity, is a flat rate income tax.[6] Properly termed a degressive tax, it would apply a flat rate to all income above some exemption level. The virtue of this scheme, long advocated by Milton Friedman, is that it could raise revenue in amounts comparable to the present system yet with a rate below 15 percent. This would drastically reduce marginal tax rates, simplify the tax system, eliminate the tax shelter game, and improve resource allocation.

Perhaps the major change among supply-siders, however, has been their willingness to identify with the heritage of classical, free-market economics. Although in most respects this marks an advance in terms of substance, it does nothing to diminish the suspicion that supply-siders seek political power through flashy packaging rather than constant adherence to a set of tested principles.

None of this bodes particularly ill for the champions of a free society. Economics alone is not sufficient to understand human action. A proper appreciation of history, politics, philosophy, law, and biology is also required. Nor is economics a sufficient vehicle for public policy formulation, since the case for free markets must ultimately rest on its moral credentials, not its vaunted efficiency and material success. Use of the proper means is the real end that we seek in human affairs, not a particular pattern of results.

The case for markets rests on reliance on voluntary cooperation rather than state coercion. Despite the importance of these ethical arguments, positive economic analysis of alternative policies can be useful. For some people, the morality of alternative government policies plays little or no role. They are interested in policies that work, i.e., policies which promote *the ends that they seek*. Friedman is probably right in his judgement that:

> Currently in the Western world, and especially in the United States, differences about economic policy among disinterested citizens derive predominantly from different predictions about the economic consequences of taking action—differences that in principle can be eliminated by the progress of positive economics—rather

[5]See, for example, interview with Jack Kemp, "Why Supply-Side Economics Hasn't Worked," *U.S. News & World Report*, April 5, 1982, p. 39; Paul Craig Roberts, "The Stockman Recession: A Reaganite's Account," *Fortune*, February 22, 1982, p. 56f.

[6]David Hale, "Rescuing Reaganomics," *Policy Review*, Spring 1982, pp. 57–69; Peter Brimelow, "Support Growing for a Flat-Rate Income Tax Levy," *Barron's*, August 3, 1981; Robert E. Hall and Alvin Rabushka, "A Proposal to Simplify Our Tax System," *Wall Street Journal*, December 10, 1981, p. 30.

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than from fundamental differences in basic values, differences about which men can ultimately only fight.[7]

Strengths of Supply-Side Economics

Supply-side economics is like the proverbial elephant described by various blind witnesses as "a tree, a rope, and sundry objects." Supply-side economics means different things to different people: For insiders like Paul Craig Roberts, Arthur Laffer, Bruce Bartlett, Jude Wanniski, George Gilder, Jack Kemp, and Norman Ture, as well as for outsiders. Congressman Phil Gramm offers a broad definition: "Supply-side economics is a new term for common business sense"; as do David G. Raboy, director of research for the Institute for Research on the Economics of Taxation, and Bruce R. Bartlett, author of *Reaganomics: Supply Side Economics in Action:* "Supply-side economics is the application of price-theory to aggregate entities in the economy—nothing more, nothing less. . . . [It is] not a new theory but one that incorporates teachings of the classical economists from Adam Smith to Alfred Marshall to Milton Friedman. . . ."[8] A better definition of supply side economics is that of David Meiselman: "Supply-side economics asserts that fiscal policy, especially its tax component, affects incentives, economic efficiency, and economic growth. . . . Change the rules or change the rewards and you change the results."[9]

The strengths of supply-side theory are quite transparent if we examine the nature of news commentary up through the mid-1970s. Recognition of the incentive effects of governmental policies has finally taken hold in the political debate in the United States and, to some extent, in Europe. Supply-siders, not academic economists, must be credited with restoring some correct microeconomic thinking to political debate.

Supply-siders have put the Keynesians and their emphasis on aggregate demand on the defensive. The revolution is so complete

[7]Milton Friedman, "The Methodology of Positive Economics," in *Readings in Microeconomics,* William Breit and Harold M. Hochman, eds. (Hinsdale, Ill.: Dryden Press, 1971), p. 25.

[8]"Interview with Phil Gramm"; David G. Raboy, "Supply-Side Economics—Myths and Realities," *Economic Report* (Washington, D.C.: Institute for Research on the Economics of Taxation, 1981); "Supply Side Rift Goes On," *Houston Chronicle,* May 27, 1982, Sec. 3, p. 3. Also see Tom Bethell, "The Death of Keynes: Supply-Side Economics," *National Review,* December 31, 1980, pp. 1560–66; and *Essays in Supply-Side Economics,* David G. Raboy, ed. (Washington, D.C.: Institute for Research on the Economics of Taxation, 1982).

[9]David Meiselman, "Fiscal Policy and Interest Rates: The Great Deficit Swindle of 1982," *Tax Review* (Washington, D.C.: Tax Foundation, Inc., May 1982).

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that the big econometric models like Wharton, Brookings, Chase, and so on, have been overhauled to incorporate supply-side effects. Despite the fact that scholarly research and real world experiments have demonstrated again and again that Keynesian analysis is flawed, it remains on prominent display in political life and in much of the business and financial community. Supply-siders have permanently unsettled these opinions in a way that academic economists have been unable to achieve.

Weaknesses of Supply-Side Economics

The most glaring weakness of supply-side economics is the tendency of "supply-siders" to overstate their position. This tendency is so strong that, with the friends that it has, supply-side economics has no need of enemies. Shooting themselves in the foot is almost a habit. Perhaps this is because supply-siders consist mainly of journalists like Jude Wanniski and George Gilder, and politicians like Jack Kemp, David Stockman, and Ronald Reagan. They are second-hand traders in ideas and sometimes lack the judgement and discernment that comes with maturity in basic economics. On some issues, they are incorrect, partly because they so fervently wish to sell capitalism. George Gilder, for example, said in an interview: "Capitalism is *not* based on greed; it is based on generosity and giving."[10] Gordon Tullock sees this argument as a serious defect in Gilder's book, *Wealth and Poverty*. While it is true that voluntary exchange is mutually beneficial, this does not mean that capitalists are selfless givers. As Tullock says, "The average successful capitalist emphatically does not live in poverty. This is fairly good evidence that his basic motive is not altruism but greed."[11]

Supply-siders clearly recognize that high marginal tax rates discourage a greater supply of goods. Yet, as Henry Simons remarked in 1945:

> Much has been made of our taxes as factors inhibiting enterprise; but their effects on this score are, I think, grossly exaggerated and, in any case, concern mainly structural faults in our levies which are, in the main, quite as inimical to equitable progression as they are prejudicial against enterprise. . . . But the bias against new investment inherent in labor organization is important and cannot be removed by changes in matters of detail.[12]

[10]Cited by Gordon Tullock, "Review of *Wealth and Poverty* and *The Zero Sum-Society*," *Policy Review*, Summer 1981, p. 143.

[11]Ibid., p. 144.

[12]Henry Simons, "Some Reflections on Syndicalism," *Journal of Labor Research*, Reprint Series No. 2 (Spring 1980): 18; orig. in *Journal of Political Economy* 52 (1944).

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Supply-siders have been notably weak in recognizing the other disharmonies that keep production and employment below their potential. The main culprits are a wide range of direct price interventions by government to keep prices above market-clearing levels, coercive pricing by labor unions, combined with the money monopoly, which allows politicians to put off the reforms to allow market pricing to work and allows them to spend more than the citizens are willing to tolerate through ordinary taxation. The explanation may not lie in an intellectual deficiency on the part of supply-siders, but their interest in short-term political influence, which forces them to use their political capital on a relatively narrow set of issues. For instance, supply-siders were virtually silent on the Reagan administration's restrictions on the import of Japanese automobiles. Supply siders, however, do acknowledge that obstacles to economic progress can take other forms. For example, Wanniski wrote: "... there is no difference between financial taxes and regulatory burdens; each requires precise amounts of labor."[13]

The central weakness of supply-side economics is that it is an incomplete version of economics. This incompleteness is poorly understood by many supply-side spokesmen, and it has proven damaging in the political arena because supply-siders are unsure about how to explain the current recession. They were so convinced about the soundness of supply-side measures, based on theoretical arguments and evidence from the Mellon cuts in the 1920s, the Kennedy cuts in the early 1960s, Puerto Rico, Hong Kong, California's Proposition 13, and so on, that they were flabbergasted when "Reaganomics" did not immediately expand output and investment.[14] If nothing else, this demonstrates that economics is a difficult subject. A good economist is rare, much rarer than the number of journalists who can understand the basic arguments of supply-siders.

The point that many supply-siders fail to understand is that their propositions are basically *long-run* fiscal remedies for ailments in Western economies, rather than quick fixes. If we are interested in the short-run economic behavior, we must consider the importance of money, and this is where the supply-siders have stumbled. In fact, the whole supply-side movement may be a hidden way to sing the praises of Milton Friedman. Supply-side analysis is generally consistent with microeconomic theory, and most advocates of the free market, including Friedman, agree with the thrust of supply-side

[13]Jude Wanniski, *The Way The World Works* (New York: Simon and Schuster, 1978), p. 85.

[14]Bruce Bartlett, "Supply Side Success Stories," *Reason,* July 1981, pp. 48–53.

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policies. However, what caught supply-siders by surprise was the distinction between the real and the monetary sectors. Taxes do drive a wedge between what employers (consumers) pay for labor services and what workers net, at the margin, thereby distorting labor-leisure choices. But the short-run behavior of money spending is influenced significantly by the amount of money in the hands of the public. Fluctuations in the rate of growth in money spending have important short-run effects on output and employment, due to the costliness of information, lags in expectations, man-made barriers to full employment, and incorrectly anticipated rates of inflation. The lack of a coherent monetary theory has proven nearly fatal to supply-siders, and risks discrediting sound measures that government policymakers should adopt for economic and moral reasons.

The Causes of Stagnation

High and erratic money growth, combined with high taxation, government-imposed and union-imposed wage rates, plus a rapidly growing welfare state, explains our economic ills. Supply-siders would agree, but their lack of a monetary theory is the source of their confusion over the current stituation in the U.S. economy. A central ingredient is confusion over high interest rates, which allegedly has forestalled the supply-side recovery. But the analysis of contractions is not that simple.

The cause of the current contraction in the U.S. economy is the standard one: a slowdown in the rate of growth of the money supply. The money supply (M1) grew by eight percent in 1979, but by 1981 the rate had been knocked down to five percent. Monetary restraint knocked the stuffings out of inflation, just as monetarists always claimed it could. The restraint was, to be sure, mixed with a little bit of luck in the form of real changes, including a peak in oil prices, due in no small part to President Reagan's deregulation of oil prices and the consequent narrowing between U.S. demand for oil and domestic production.

The Federal Reserve authorities, however, deserve very little applause for their performance. Virtually all of the reduction in the growth of M1 occurred between April and October of 1981, when the money supply did not grow at all. This delivered a sharp jolt to the economy, eliminating the possibility of a smoother transition to less inflationary conditions. Money growth has resumed its erratic path since last October, and at much higher rates, about 10 percent, annualized. Where the U.S. goes next depends on how an unpredictable Fed responds to the immense pressures to administer injec-

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tions of new money; a resumption of double-digit inflation is increasingly probable. Uncertainty will be endemic until the Fed's monopoly control over the money supply is broken. Unlimited discretion by the political appointees at the Federal Reserve, subject to political pressures, has not worked and never will work. Only a nonpolitical or free-market monetary system, as proposed by Hayek, really has a chance of working well over the long run.[15] No one can write a quantity or price-level rule that can truly bind government officials in a constitutional sense.

A free banking system would allow the general public to choose among suppliers in an openly competitive process. Firms like American Express and Bank of America, guided solely by pursuit of gain, would limit the quantity issued or be driven from business. The dominant monies to emerge would doubtless offer the public the least risk of fluctuation in value and probably offer convertibility into gold at a fixed price, or into a fixed-weight basket of commodities, or a price index refund scheme. However, no one can accurately predict the exact money scheme that would emerge from the ingenuity of the market.

Applying the monetary brakes caused the recession, but Americans should rejoice because recessions have benefits, as well as costs: Recessions force the necessary price and output adjustments that will eventually restore long-run economic growth. Some businesses cannot survive the transition to less inflation. Some investments cannot pay for themselves in a less inflationary environment. This is part of the cost of restoring noninflationary conditions. Free enterprise is a profit and loss system and the losses are every bit as important to efficiency and allocation as profits. Perhaps more important.

People have paid a tremendous amount of attention to the behavior of interest rates during this recession, but wage rates—the prices of labor services—are equally crucial. Deceleration of inflation tends to raise unemployment because wage rates are "sticky" downward: They do not react quickly to an unexpected decrease in money spending. Price-cost margins get squeezed and many businesses find that their loss minimizing outputs are at lower levels of production. Labor prices tend to keep rising at their old, unsustainable pace for as long as a year after a reduction in the growth of money spending, thereby pricing a sizable number of workers out of jobs. Prices of products,

[15]For an elaboration of Hayek's proposal, see F.A. Hayek, *Denationalization of Money—The Argument Refined,* 2d ed., Hobart Paper 70 (London: The Institute of Economic Affairs, 1978).

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on the other hand, react more quickly to disinflation without long delays (to the amazement of most observers).

Whenever hourly wage costs in the economy as a whole rise more rapidly than aggregate spending, employment declines and each time the growth in hourly labor costs exceeds growth in aggregate spending, unemployment rises.[16] These relationships appear empirically reliable and they are confirmed by the stagnation of the U.S. steel and automobile industries, where wage rates have increased far more rapidly than the average manufacturing wage rate. In England the process of adjusting wage rates to less inflationary conditions is beginning to bear fruit. Wage settlements are in the range of six percent and a "new realism" is permeating workplaces. Deceleration in the prices of labor services and in the prices of goods, if sustained, promises lower inflation and revival of employment, productivity, and hence prosperity.[17]

Few economic observers, including most supply-siders, have a firm grip on the issue of interest rates. Milton Friedman and Yale Brozen are outstanding exceptions.[18] There is both a long-run and a short-run component to the high real rates of interest that currently prevail in U.S. credit markets. The long-run component is the expectation of continued inflation and the short-run component is the erratic behavior of money growth, which appears even more variable since October 1979, when the Fed announced its determination to target monetary aggregates rather than short-term interest rates (in particular, the "federal funds rate").

Expectations are recursive or adaptive to some extent, that is, formed on the basis of past experience. In the United States, the historic experience of lenders and borrowers was that relatively brief periods of inflation were followed by deflationary restorations of the value of the dollar. Following the Second World War, Korean War, and Vietnamese War, Americans still did not completely believe that the 30 years of rising prices would continue, as evidenced by the plummeting of AAA corporate bond yields during each recession, including the 1974–75 downturn. Now, however, people have learned

[16]See, for instance, the excellent statistical tables assembled by Yale Brozen, "Money and Interest Rates," mimeo, presented at the University of Hartford, West Hartford, Conn., June 10, 1982.

[17]There is evidence that the advance in nominal wages and salaries is beginning to soften. See Ralph E. Winter, "Pay Raises Start to Shrink, Signaling Possible Long-Term Fall in Inflation," *Wall Street Journal*, June 30, 1982, p. 25.

[18]Brozen; Milton Friedman, "The Yo-Yo Economy," *Newsweek*, February 15, 1982, p. 72; Milton Friedman, "Interest Rates and the Budget," *Newsweek*, June 28, 1982, p. 70.

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that the monetary authorities cannot be trusted to preserve the value of the dollar, and U.S. financial markets behave very much like those in Buenos Aires, Santiago, and Rio de Janeiro. Real interest rates will remain above their historic average (of three percent) until people are convinced that the Federal Reserve is determined to pursue a noninflationary growth of money. The Fed's recent performance and the exploding federal budget deficit, however, offer little encouragement for monetary control and lower long-run interest rates.

Erratic money growth appears to explain the recent fluctuations in interest rates, as well as their high average real level. Today, when the Federal Reserve steps up the rate of growth of money beyond anticipated rates, people expect a step up in the rate of inflation. Interest rates rise immediately on both short- and long-term obligations as borrowers seek additional debt and lenders add an inflationary premium. Similarly, the evidence appears consistent with the hypothesis that *expected* declines in money growth rates cause short-term interest rates to fall. This hypothesis, of course, conflicts with the Keynesian liquidity preference theory that predicts an inverse relationship between monetary growth and short-term interest rates.

The Power of Money

In the short run, the evidence is very powerful that monetary aggregates are the major ingredient causing business fluctuations. In the short run, fiscal policy, within the usual range of fluctuation, has little or no dependable impact on the business cycle. People need time to adjust to real fiscal changes. On the other hand, in the long run, monetary policy is less important than fiscal policy, though not trivial, in its effect on real variables like the level of national production, employment, work effort, and capital formation. In the long run, fiscal policy influences the size and composition of output by affecting efficiency, incentives, growth, and income distribution via returns from marginal effort.

Confusing the short-run and long-run effects of monetary and fiscal policies is the major source of analytical error by the supply-siders, as well as Keynesian demand-siders. Because the effects of monetary policy swamp the effects of tax and expenditure actions in the short run, many supply-siders expected and promised too much in the short run and they are now paying a political price. The proponents of the supply-side approach are on the same shaky ground as Keynesians regarding the large and certain short-run impact of changes in tax rates, including the five percent reduction that occurred October 1, 1981, and the 10 percent reduction on July 1, 1982.[19]

[19]Meiselman.

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The confusion extends further because most of the talk in Washington and on Wall Street about deficits and interest rates is almost entirely wrong. There is no reliable relationship between deficits and interest rates.[20] Moreover, the simple numbers on federal revenues and deficits conceal as much as they reveal; nor can we have confidence in the crystal ball forecasts about the budget, tax, or deficit estimates. The tragedy is that the Reagan program, which is based on correct, long-run theory, will be abandoned and discredited before it is even implemented.

Conclusion

Although supply-side economics has had a noticeable and desirable effect on economic policy in the United States, its staying power is dubious. As a guide or vehicle to redirecting government policy back toward a free society, it is inadequate.

Supply-side economics suffers from two serious defects. First, it is an incomplete version of economics; it offers a limited set of long-run propositions about fiscal policy, while ignoring the effects of monetary policy on economic activity. Indeed, the supply-siders' inattention to monetary theory has damaged their political influence, since their predictions have been falsified by events.[21] Second, supply-side economics evades the ethical question about the proper role of government in a free society. Supply-siders emphasize the *increased* tax revenues they expect to flow from lowered tax rates, but fail to mention that taxes are coercive and should be reduced on ethical grounds.

Years ago, Americans were hostile toward state intervention. Individual responsibility and limited government were unquestioned tenets of life. America was a land of great opportunity and economic freedom. The function of government was to provide a stable institutional framework so that individuals could pursue their diverse interests without socially destructive actions. We must restore the belief in the value of freedom, and expose the debased nature of coercive government redistribution programs. We must explain more

[20]See evidence in Brozen.

[21]The intemperate statements of Arthur B. Laffer illustrate the point: "I don't know of any major inflation that has been stopped by a recession, by tight money and by high interest rates. . . . It's nonsense to think that the current policy of slowing growth in the quantity of money will slow inflation. . . . The Fed has no control over the quantity of money at all." Interview with Arthur B. Laffer, *U.S. News & World Report*, January 18, 1982, "What Went Wrong with 'Supply-Side' Economics," pp. 36–38. On the evidence, see Leland B. Yeager and associates, *Experiences with Stopping Inflation* (Washington, D.C.: American Enterprise Institute, 1981).

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clearly how private property and free markets nurture and reinforce just action.[22] Finally, economists must realize that despite the usefulness of their analytical tools, a broader approach to public policy is required if we are to preserve the principles of individual liberty. Our approach must encompass ethical and legal theory as well as economics.

[22]See Arthur Shenfield, "Capitalism Under the Test of Ethics," in *Homage to Mises*, John K. Andrews Jr., ed. (Hillsdale, Mich.: Hillsdale College Press, 1981), pp. 55–65.

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TRADE ADJUSTMENT ASSISTANCE: A CASE OF GOVERNMENT FAILURE

James A. Dorn

Introduction

The Trade Adjustment Assistance (TAA) program for workers, from its inception in 1962 to its restructuring in 1981, offers an interesting case of government failure. Intended to provide workers with an incentive to adjust to import competition and to gain the support of organized labor for trade liberalization, it has failed on both counts. Workers have used TAA primarily as an income support program during temporary layoff unemployment in heavily unionized industries, and organized labor has continued to lobby for protectionist measures.

After the Trade Act of 1974 relaxed TAA eligibility requirements and increased cash benefits, there was a rapid growth in TAA participation, especially among auto and steel workers. This growth, along with the failure of displaced workers to utilize the job search, relocation, and training provisions of the law, led the Reagan administration to call for reform.

Congress responded by enacting the Omnibus Budget Reconciliation Act of 1981 (P.L. 97–35), which amended the 1974 Trade Act. The amendments provided for the following changes. (1) The "contributed importantly" test for determining the impact of imports on domestic unemployment was replaced by the stricter "substantial cause" test. Imports must now be *at least* as important as any other cause of unemployment in order for displaced workers to qualify for trade adjustment assistance, whereas, under section 222 of the Trade Act, imports merely had to be "important but not necessarily more important than any other cause" of unemployment. (2) Trade read-

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justment allowance (TRA) was reduced to the level of state unemployment insurance (UI), and the sum of UI and TRA was limited to 52 weeks, except for workers participating in approved training programs, who are eligible for an additional 26 weeks of TRA. (3) A greater emphasis was placed on job training. (4) There was an increase in job search and relocation allowances. These changes significantly reduced the cost of TRA from $1.4 billion in FY 1981 to an estimated $101.6 million in FY 1982.

The Reagan administration's attempt to curtail the TAA program for workers has not been entirely successful. Set to expire on September 30, 1982, Congress used the 1981 amendments to extend the program's life another year. Moreover, the Reagan administration's attempt to end all cash payments on July 1, 1982, never got off the ground. Most importantly, Congress used the Miscellaneous Revenue Act of 1982 (P.L. 97–362) to reinstate the less restrictive, "contributed importantly" test for determining whether increased imports caused domestic unemployment (sec. 204). Thus, the "substantial cause" test was never implemented, and the decline in TRA payments in FY 1982 can be attributed to the changed benefit formula that reduced entitlement costs. Finally, given the high rates of unemployment in the auto and steel industries, it is unlikely that Congress will allow the TAA program for workers to expire at the end of FY 1983.

This paper examines the TAA program for workers from a property rights perspective in order to improve our understanding of its failures, and to suggest an alternative policy agenda for promoting labor-market adjustment to import competition and freer international trade. It will be contended that fundamental institutional changes—such as divesting unions of their coercive power and limiting the government's power to benefit special interest groups—are needed to facilitate adjustment to economic change and enlarge world trade. However, before such changes can occur, it will be necessary to have an "economic education revolution." Only if individuals (especially the media) understand the importance of free markets in coordinating economic behavior and generating mutually beneficial exchanges, will they seek the institutional changes necessary for economic prosperity and peace.

With a greater public awareness of the reasons for government failure, as illustrated by the TAA program for workers, and a more general acceptance of the market alternative, legislators will face a higher cost of supporting coercive union activities, minimum wages, and the other numerous impediments to freer trade that have been left intact by the Reagan administration.

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First, we will summarize the effective property rights setting under the 1962 and 1974 trade laws. Next, we shall use economic theory to derive the implications of the worker TAA program for facilitating the adjustment of workers to import competition. Particular attention will be paid to the effect of the Trade Act of 1974 on temporary layoff unemployment and job search activity for union and non-union workers affected by import competition. We will then evaluate the TAA program as a means of promoting long-run trade liberalization, and show that the negotiations approach to freer international trade, as exemplified by TAA, offers little promise of convincing the world of our commitment to the principle of free trade. We conclude by suggesting a principled approach to public policy, and argue that such an approach is a necessary condition for labor market efficiency and freer international trade.

The Property Rights Framework, 1962–1981

Effective rights to take various actions and to capture the consequent rewards are what we mean by property rights. Such rights help determine an individual's opportunities and play an important role in determining individual action.[1] By examining the array of rules and regulations confronting workers seeking trade adjustment assistance under the Trade Expansion Act of 1962 and the Trade Act of 1974, we will be able to make some predictions about the economic behavior of trade-affected workers.

The Trade Expansion Act of 1962

The Trade Adjustment Assistance program for workers was introduced as part of the Trade Expansion Act of 1962, which took effect October 11, 1962 (P.L. 87–794; 76 Stat. 872). Under this law, the Tariff Commission was responsible for determining whether a group of workers was eligible to apply for TAA certification. The State Employment Security Agencies (SESAs), meanwhile, were responsible for determining individual eligibility and administering benefits. The President had the authority to terminate group certification, and budget authority rested with the Secretary of Labor (sec. 337).

Determining group eligibility for worker TAA was a two-step process: The Tariff Commission first had to determine whether an increase in imports of a like or directly competitive product was linked to a prior trade concession; it then had to decide if the increased imports were the "major factor" causing the rise in domestic unemployment.

[1]On the definition and importance of property rights for determining individual behavior, see Roland N. McKean (1972).

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The commission's decision had to be made within 60 days after the workers filed their petition (sec. 301).

If the Tariff Commission approved the group petition for TAA and the President certified it, individual workers could apply for benefits at their local SESA. In order to qualify for cash benefits (TRA), workers had to be separated from their firms after the "impact date" (the date on the group certification designating the first occurrence of unemployment caused by import competition); apply for TRA within a two-year period following their layoff or before the termination date; have worked for at least 78 of the preceeding 156 weeks; have worked at least 26 of the 52 weeks prior to their layoff in the adversely affected firm; and earned a weekly wage of at least $15 (sec. 322).

Once a worker was eligible for TRA, he could also receive training and other employment services upon recommendation by his SESA. However, if a worker refused training, the Secretary of Labor could discontinue his TRA (sec. 327). Certified workers, who were totally separated from their firms and heads of households, were eligible for relocation allowances if they could not find comparable local employment; relocated within the United States; and had found, or had a firm offer of, reasonably stable employment (secs. 328–329).

Under the Trade Expansion Act, certified workers were entitled to weekly trade readjustment allowance equal to 65 percent of either their average weekly gross wage or the average manufacturing wage, whichever was less. Unemployment insurance was deducted from TRA, and partially separated workers—those for whom hours had been reduced by 20 percent or more and wages by at least 25 percent—had their TRA reduced by 50 percent of their weekly pay. If for any week of unemployment, the sum of TRA, UI, training allowances, and remuneration exceeded 75 percent of a worker's average weekly gross wage, his TRA was decreased by the excess. TRA payments were limited to 52 weeks, except for workers engaged in approved training programs, who were eligible for an additional 26 weeks of TRA. Workers 60 years of age or older, who were eligible for TRA, could collect cash benefits for up to 65 weeks. Finally, workers were eligible for TRA for any week of employment or underemployment in the two-year period following their initial layoff or their first cash payment (secs. 323–324).

The Secretary of Labor was supposed to minimize the need for TRA by facilitating the readjustment of displaced workers to import competition. Training and employment services were provided to speed workers' reentry into the labor market. Workers participating in an approved training program outside their locality could receive

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subsistence allowances of up to $5 per day and 10 cents per mile traveled (sec. 326). Meanwhile, workers entitled to relocation allowance could collect reasonable transportation expenses and a lump-sum payment equal to 2.5 times the average manufacturing wage (sec. 330).

The Trade Act of 1974

The Trade Act of 1974 (88 Stat. 1978) was enacted January 3, 1975, but those sections relating to worker TAA did not take effect until April 3, 1975. The intent of this legislation was to promote "fair and free competition" between the United States and other countries, and to create full employment and economic growth at home. Like the Trade Expansion Act, this statute was supposed to achieve "fairness" via industry-wide import relief and trade adjustment assistance (sec. 2).

Under the Trade Act, administrative authority for worker TAA was transferred from the Tariff Commission to the Department of Labor, eligibility requirements for TRA were significantly reduced, and cash payments were increased. Let us examine each of these changes in turn.

The Trade Act required that workers file group petitions for TAA certification with the Secretary of Labor through the Office of Trade Adjustment Assistance, Bureau of International Labor Affairs (ILAB). The Secretary then had 60 days to investigate the petition and determine whether the displaced workers were eligible to apply for TAA. The actual investigation was conducted by the Director of the Office of Trade Adjustment Assistance, who had 45 days to investigate group petitions and forward his report and recommendation to the certifying officer at ILAB. The certifying officer then had 15 days to determine eligibility and issue his group certification. He also had the authority to terminate his certification upon the Director's recommendation.[2] Once group eligibility was established, the SESAs were again responsible for determining an individual worker's eligibility and administering benefits.[3]

Section 222 of the Trade Act established the following criteria for group certification: (1) Imports of "like or directly competitive" products must have increased; (2) production and/or sales must have decreased absolutely in the petitioning workers' firms or subdivisions; (3) a "significant number or proportion" of worker-petitioners

[2]29 C.F.R. 90, secs. 90.12, 90.15–90.17, in 40 Fed. Reg. 14909–14911, 3 April 1975.

[3]For the rules and regulations governing "Adjustment Assistance for Workers After Certification," see 40 Fed. Reg. 16304, April 11, 1975.

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must have become or be expected to become unemployed or underemployed; and (4) the increased imports must have "contributed importantly" to (but not necessarily have been the major cause of) the decline in domestic sales and/or output, and employment.

According to the Secretary of Labor's interpretation, "like or directly competitive" referred to products that were "substantially identical" or "substantially equivalent for commercial purposes," while "increased imports" meant that imports had increased either absolutely or relative to domestic production. Moreover, it was understood that such an increase in imports must "have occurred from a representative base period," subsequent to the most recent trade concessions. With respect to the third criterion, a "significant number or proportion" was interpreted as 50 workers or five percent of the work force, whichever was less. If the work force was less than 50 workers, at least three workers had to be displaced by import competition.[4]

For his interpretation of "contributed importantly," the Secretary relied on the loose definition supplied by the Senate Finance Committee's report: "A cause must be significantly more than 'de minimis' to have contributed importantly, *but the Committee does not believe that any mechanical designation percentage of causation can be realistically applied*" (U.S., Congress, Senate 1974, p.133; emphasis added).

In practice, TAA investigators relied on customer surveys and industry analysis to determine whether import competition had "contributed importantly" to domestic unemployment. However, the GAO found that the use of customer surveys to establish a "direct link" between imports and unemployment produced low quality information that reflected subjective factors, and led to inconsistent results (GAO 1977, pp. 28–30). Likewise, the GAO found that the use of industry analysis to determine whether an "implicit relationship" existed between imports and unemployment was unsatisfactory, given the lack of appropriate "guidelines, procedures, and criteria for investigators to follow" (p. 34). The GAO study concluded that "without guidelines, procedures, and criteria, Labor's investigators have great

[4]The Secretary's interpretations can be found in his regulations on the "Certification of Eligibility to Apply for Worker Adjustment Assistance" (29 C.F.R. 90, in 40 Fed. Reg. 14909, April 3, 1975). Although the Secretary of Labor had the authority under section 248 of the Trade Act to issue regulations concerning worker TAA, his prescriptions necessarily reflected congressional intent (see U.S., Congress, House 1973 and Senate 1974). The Secretary's definition of increased imports was derived from section 201 of the 1974 Trade Act.

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flexibility in analyzing petitions, which can lead to inconsistent decisions" (p. 35).

The vagueness and inconsistency of the criteria used for determining worker group certification under the Trade Act has been noted by Marc Goodman, a former TAA investigator:

> The difficulties of interpretation and verification made the disposition of cases seem arbitrary not only to would-be recipients but also to the Labor Department's own TAA investigators. The investigators were exhorted to de-emphasize concerns with consistency . . . and to concentrate on the goal of maximizing "production" (of reports). (1981)

We can now summarize the basic differences in TAA group eligibility requirements for workers under the 1962 and 1974 trade laws: Increased imports no longer had to be caused "in major part" by prior trade concessions; increased imports now had to be merely an important rather than a major cause of decreased output and employment; and imports no longer had to increase absolutely—a decrease in domestic production with imports essentially the same would qualify as an increase in imports. In addition, under the 1974 legislation, work requirements for determining an individual worker's eligibility for TRA were relaxed. The requirement that an adversely affected worker be employed for at least 78 of the 156 weeks preceeding his layoff was abolished. Thus, to determine eligibility, a worker had only to be employed for at least 26 of the 52 weeks preceeding his separation, and at wages of at least $30 per week (sec. 231).

With respect to the benefit structure, the 1974 Trade Act increased TRA from 65 to 70 percent of a worker's average weekly gross wage, not to exceed the average weekly manufacturing wage. Meanwhile, the sum of a worker's TRA, remuneration, UI, and training allowance was increased to the lesser of 80 percent (versus 75 percent) of his average weekly gross wage, or 130 percent of the average weekly manufacturing wage, before his TRA could be reduced (sec. 232).

The duration of cash payments remained basically the same as under the Trade Expansion Act. However, the 1974 Trade Act did increase the supplemental TRA for workers 60 years of age or older from 13 to 26 additional weeks. The maximum period TRA could be paid to any worker was now 78 weeks. One further point should be noted; namely, under the 1974 law, certified workers could collect TRA for subsequent layoffs up to two years after their initial layoff

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(sec. 233). And, such subsequent layoffs did not have to be related to import competition.[5]

Other relevant changes in the 1974 benefit structure were the increase in job training and relocation allowances, and the addition of a job search allowance. Workers participating in authorized job training were eligible for transportation and subsistence benefits of 12 cents per mile and $15 per day (sec. 235). If a worker relocated, he could be reimbursed for 80 percent of his moving expenses and could receive a lump-sum payment of three times his average weekly wage, not to exceed $500 (sec. 238). Finally, a worker engaged in an approved job search was eligible to receive 80 percent of his job search expenses up to $500 (sec. 237). In order to qualify for job search benefits, workers had to look for a job within the United States, be unable to secure comparable employment within reasonable commuting distance, and file an application for job search benefits within one year after their separation, or within a reasonable time after they completed an approved job training program (sec. 237).

Section 245 of the Trade Act stipulated that the TAA program for workers was to be financed out of customs duties earmarked for the "Adjustment Assistance Trust Fund." However, this fund was never created, and TAA was financed out of appropriations to the Federal Unemployment Benefits and Allowances (FUBA) account, which was part of the UI system. In fact, the actual monies that were allocated to workers under the TAA program came out of general tax revenues, and not from the unemployment insurance trust fund.[6]

Incentives and Worker Adjustment Under TAA

Program Growth

The incentive of displaced workers to petition for TAA and apply for TRA will depend on the net benefits they expect to capture. These expected net benefits will be determined by the size and duration of weekly cash payments (TRA) and by the probability of capturing them, as well as by the costs of the application process. The probability of certification and the probability of actually receiving TRA, of course, will depend on the *effective* legal constraints facing workers and administrators. Monitoring and enforcement costs, therefore,

[5]The treatment of subsequent layoffs under the 1974 law led the General Accounting Office (GAO) to remark that worker certification can be viewed as "a bank account which can be drawn upon regardless of the cause of subsequent layoffs up to two years from the date of the first layoff" (1979, p. 5).

[6]For a more detailed discussion of TAA financing, see U.S., Library of Congress, Congressional Research Service (1981b, p.1; hereafter, CRS).

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will play a role in determining capturable rewards under the TAA program for workers. Higher monitoring and enforcement costs will provide TAA administrators with greater discretion; and, given their incentive to expand their bureaus,[7] will almost certainly lead to an increase in the TAA program budget.

It is beyond the scope of this paper to consider all the various details affecting workers' expected net benefits under the TAA program as it developed over the 1962-1981 period. But, it should be clear from our previous discussion of the property rights framework that the 1974 Trade Act considerably increased workers' expected net benefits relative to the Trade Expansion Act of 1962. We should also note that with the implementation of the Trade Act, the Department of Labor was instructed to "actively" promote the TAA program for workers.[8] This administrative change may have reduced information costs to potential petitioners, thereby helping to increase workers' expected *net* benefits from TAA. Because of these and other changes that increased workers' expected net benefits under the Trade Act of 1974, we would expect a significant growth in program activity after April 3, 1975. This hypothesis is confirmed by the existing data.

During the first seven years of the worker TAA program under the Trade Expansion Act, the Tariff Commission denied all 25 petitions for worker group certification. The first positive determination did not come until November 1969 (CRS 1981a, p.1). Over the entire 12-year history of the Trade Expansion Act, 284 petitions were *filed*—approximately 24 petitions per year— covering 122,450 workers. By April 3, 1975, when the Trade Expansion Act was superseded by the Trade Act, 110 petitions had been *certified* covering an estimated 54,000 workers and paying cash benefits (TRA) of $85 million.[9]

The relaxation of eligibility requirements under the 1974 Trade Act greatly increased the probability that workers would be successful in their certification efforts. Moreover, the increased benefit schedule meant that certified workers could expect a larger cash payment for TRA. As a result, the TAA program for workers rapidly expanded under the Trade Act, until October 1, 1981, when benefit levels were reduced by the 1981 amendments. Between April 3, 1975, when the worker TAA provisions of the Trade Act took effect, and September 30, 1981, when the 1981 amendments took effect,

[7]For a discussion of the budget-maximizing incentive of government bureaucrats, see William A. Niskanen (1971).

[8]Goodman (1981).

[9]U.S., Congress, House (1979, pp.2–3); Richardson (1980, pp.13–14).

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12,960 petitions were filed—approximately 1,994 petitions per year—covering an estimated 2,308,164 workers.[10] In the first year under the Trade Act, the Secretary of Labor certified 372 petitions covering an estimated 146,831 workers (GAO 1977, p.5). Between April 3, 1975, and September 30, 1981, the Secretary had certified 3,773 petitions covering an estimated 1,310,484 workers. During this same period, an estimated 1,320,733 workers received cash benefits (TRA) amounting to $3.87 billion. (The data used to calculate the totals for TAA activity under the Trade Act are presented in Table 1.)

Union versus Non-Union Participation

The difference in union/non-union participation in the TAA program, under the Trade Expansion Act of 1962 and the Trade Act of 1974, will depend on the relative levels of TRA per worker each of these groups expects to capture. For example, we would expect an increase in the union/non-union benefit differential to increase the relative participation of union workers, and conversely, other things equal. We shall now proceed to show that the 1974 Trade Act increased the union/non-union benefit differential *for any given union/non-union wage differential.* Consequently, other things constant, we expect the union/non-union participation rate to be *greater* under the 1974 law than under the 1962 law.

Recall that under the Trade Expansion Act of 1962, TRA equaled the *lesser* of 65 percent of the prevailing wage (.65 W_p) or 65 percent of the average manufacturing wage (.65 W_m). We assume that union workers receiving TRA earn an average wage in excess of the average manufacturing wage. Thus, under the 1962 law, they could expect to receive TRA benefits per worker equal to 65 percent of the average manufacturing wage ($B_u = .65\ W_m$). Non-union workers who receive TRA, meanwhile, are assumed to earn an average wage less than the average manufacturing wage. Therefore, under the 1962 law, they could expect to receive TRA benefits per worker equal to 65 percent of their prevailing wage ($B_{non-u} = .65\ W_p^{non-u}$). We also assume that for those workers receiving TRA, the prevailing union wage is 115 percent of the average manufacturing wage ($W_p^u = 1.15\ W_m$), while the prevailing non-union wage is 95 percent of the average manufacturing wage ($W_p^{non-u} = .95\ W_m$). We shall see that this assumption

[10]For the number of petitions filed by fiscal year under the Trade Act, see Table 1 (infra). The number of workers covered by the petitions was estimated from yearly data provided by the U.S. Department of Labor, Employment and Training Administration, Office of Trade Adjustment Assistance, *Management Information Report* (1982b, p. 5; hereafter, ETA).

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TABLE 1

TRADE ADJUSTMENT ASSISTANCE: KEY FACTS BY FISCAL YEAR UNDER THE TRADE ACT OF 1974

ACTIVITY	Fiscal Years[a] 1981	1980	1979	1978	1977	1976	Transition Quarter
PETITIONS							
Filed	1,881	5,024	1,890	1,825	1,269	932	139
Certified	375	924	950	698	401	381	44
Workers Certified (Est.)	49,296	664,098	139,600	166,114	117,206	144,365	29,805
PAYMENTS							
TRA App. Filed	236,431	688,406	162,389	212,093	137,678	104,850	55,031
Workers Paid	281,073	531,736	132,188	155,769	110,705	62,362	46,900
Amt. Paid	$1,440,049,387	$1,622,171,749	$256,096,165	$257,312,265	$147,961,567	$79,359,264	$71,039,569
Av. Wkly. Ben. Amt.	$140	$126	$70	$68	$57	$47	$58
Av. Payment/Worker	$5,123	$3,051	$1,937	$1,652	$1,337	$1,272	$1,515
Av. Weeks Duration	36.5	24.1	27.4	24.3	23.4	27.3	26.0
Percent Workers Unemployed at Time of Filing for TRA	61.2%	60.1%	40.8%	27.7%	10.8%	INA	INA

SOURCE: U.S., Department of Labor, Employment and Training Administration, January 1982.
[a]Fiscal years 1977–1981 are on an October 1–September 30 basis; fiscal year 1976 runs from July 1, 1975–June 30, 1976; and the transition quarter represents the period April 3, 1975, when the new benefit structure under the Trade Act became effective, through June 30, 1975.

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about the union/non-union wage differential will not affect our qualitative results.

Given our assumptions, the union/non-union, per-worker benefit differential under the 1962 law will be:

$$\frac{B_u}{B_{non-u}} = \frac{.65W_m}{.65\ W_p^{non-u}} = \frac{.65W_m}{.65(.95W_m)} = \frac{1}{.95} = 1.05.$$

That is, given our assumed union/non-union wage differential for TRA recipients, union workers could expect to receive five percent more per worker in TRA benefits than non-union workers under the 1962 law. Note that the union/non-union benefit differential under the 1962 law did not directly depend on the union/non-union wage differential, because the most union workers could receive in TRA benefits was 65 percent of the average manufacturing wage. Instead, the benefit differential would only be affected by the proximity of the non-union worker's wage to the average manufacturing wage. If non-union wages were more than 95 percent of the average manufacturing wage, the union/non-union benefit differential would decrease, and conversely.

The situation changed after the 1974 Trade Act was enacted. Under this law, TRA equaled 70 percent of the prevailing wage ($.70W_p$) *up to* the average manufacturing wage (W_m). This meant that if a union worker received a premium of 43 percent or more above the average manufacturing wage, his TRA benefit would equal the average manufacturing wage (if $W_p^u \geq 1.43\ W_m$, $B_u = W_m$).

On the other hand, if we retain our assumption that the union wage is 115 percent of the average manufacturing wage, the union worker would get TRA benefits equal to 70 percent of his prevailing wage ($B_u = .70\ W_p^u$). Likewise, non-union workers would receive 70 percent of their prevailing wage in TRA benefits ($B_{non-u} = .70\ W_p^{non-u}$). Thus, under the assumption that there was no change in the union/non-union wage differential between the 1962 and 1974 laws, the union/non-union, per-worker benefit differential under the 1974 law will be:

$$\frac{B_u}{B_{non-u}} = \frac{.70\ W_p^u}{.70\ W_p^{non-u}} = \frac{.70(1.15\ W_m)}{.70(.95\ W_m)} = \frac{1.15}{.95} = 1.21.$$

What is interesting in this case is that the union/non-union benefit differential varies directly with the union/non-union wage differential, provided the union wage is less than 43 percent above the average manufacturing wage. Thus, without any increase in the union/non-union wage differential, the 1974 law unambiguously increased the union/non-union benefit differential from 1.05 to 1.21. Further-

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more, for those employments where the union wage exceeds the average manufacturing wage by 43 percent, the union/non-union benefit differential would increase to 1.50:

$$\text{If } W_p^u \geq 1.43\ W_m\ ,$$

$$\frac{B_u}{B_{non-u}} = \frac{W_m}{.70\ W_p^{non-u}} = \frac{W_m}{.70\ (.95\ W_m)} = \frac{1}{.665} = 1.50.$$

Since some union employments will be characterized by wages in excess of 43 percent of the average manufacturing wage (e.g., in 1979, steelworkers received a premium of 58 percent over the average manufacturing wage),[11] while other union employments will fall below the 43 percent premium, it is reasonable to take the average of our estimates (i.e., 1.36) as an indicator of the actual union/non-union benefit differential under the 1974 law. In fact, during the April 1975–June 1982 period (which is not significantly different from the April 3, 1975–September 30, 1982 period), the actual union/non-union, per-worker benefit differential was 1.41, very close to our estimate.[12]

It should be clear from the above analysis that the 1974 Trade Act increased per-worker cash benefits in favor of union workers, and that those union workers who received in excess of 43 percent of the average manufacturing wage expected the greatest gain in TRA relative to all other workers.

On the basis of the union/non-union differential in TRA per worker during the Trade Expansion Act and its widening after April 3, 1975, we would expect union workers to participate more actively in the TAA program relative to non-union workers, especially under the Trade Act (up to the 1981 amendments). Moreover, those union workers receiving wages far in excess of the average manufacturing wage are expected to dominate the TAA program in the post-Trade Expansion Act period.

There are two other reasons for expecting unions to be the most

[11]See U.S., Bureau of the Census, *Statistical Abstract of the United States: 1980*, 101st ed. (Washington, D.C., 1980), p. 413.

[12]See n.18, infra, for the calculation of the actual union/non-union, per-worker benefit differential under the Trade Act.

We should point out that our *qualitative* results regarding the increase in the union/non-union, per-worker benefit differential under the 1974 law will not be affected by different assumptions about the union/non-union wage differential, provided that: Union workers receiving TRA earned, on average, more than the average manufacturing wage, and more than non-union workers under the 1962 and 1974 laws. These conditions are satisfied, since the two largest groups of union workers receiving TRA have been auto and steelworkers, both of whom have earned wages in excess of the average manufacturing wage, and in excess of the average non-union wage.

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active participants in the TAA program. First, union workers are better represented in Washington, D.C., and have substantially greater resources at their disposal to contest adverse certification decisions relative to non-union workers. Thus, certification officials may be much more reluctant to deny petitions from union (versus non-union) workers. This would increase union workers' probability of being certified (other things equal), and increase their incentive to participate in the TAA program relative to non-union workers.[13]

Second, we can expect the bulk of participants in TAA to be union workers, because union wages are by their very nature non-competitive—unions typically use their coercive power to get above-market wage rates; that is their explicit purpose.[14] As such, unionized firms and industries will normally be more susceptible to import competition than non-union firms and industries. The heavily unionized auto and steel industries, of course, offer the clearest example of this point. In these two industries, union workers have continuously increased their wages even though their productivity has been falling; and, their wages are far above the average manufacturing wage. This has put them at a distinct disadvantage with the Japanese who have been able to reduce unit labor costs and achieve a comparative advantage in these industries.[15] With the relaxed eligibility criteria for TAA under the 1974 Trade Act and the vagueness of the "contributed importantly" clause linking imports and unemployment, we would expect auto and steel workers to be among the most active

[13]The actual union/non-union denial rate for TAA certification under the 1974 Trade Act is revealing. During the April 1975–October 1982 period, only 26 percent of union workers were denied certification versus a 62 percent denial rate for non-union workers (calculated from Table 3). For the rules and regulations governing the appeal process, both for administrative and judicial review, see 29 C.F.R. 90, secs. 90.18–90.19, as amended in 42 Fed. Reg. 32775–32776, June 28, 1977.

[14]On the coercive power of unions, see William H. Hutt (1973).

[15]See Alfred L. Malabre, Jr. (1980). Citing a report by the Chicago Federal Reserve Bank, Malabre points out that: "[A]s a result of relentless pressure by the UAW for higher wages and benefits for its members, wages in the U.S. auto industry today are between 30% and 50% higher than the average U.S. industrial wage." Furthermore, U.S. auto workers' wages are "more than double the wages of Japanese auto workers (and) the productivity of U.S. auto workers has been declining, while that of Japanese workers has been rising." The same is true of the U.S. steel industry. According to Malabre: "U.S. steelworkers were paid more than $11 hourly last year [1979], nearly double the $6.69 hourly pay of U.S. factory workers in general. Japanese steelworkers, by comparison, earn about 60% as much as their U.S. counterparts. But they produce more steel each hour. Studies show that for every ton of steel a U.S. worker produces in a given time, a Japanese [worker] produces as much as a ton and a quarter." (We found that in 1979, steelworkers were paid $10.42 per hour; a premium of 58 percent above the average manufacturing wage.)

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participants in the TAA program, and to collect the lion's share of cash benefits.[16]

Our reasoning leads us to conclude that union workers, especially auto and steelworkers, should be the principal demanders of TAA, particularly under the Trade Act of 1974. Existing evidence supports this hypothesis. McCarthy found that during the 1962–1972 period, the nonrubber footwear industry, which is heavily unionized, had the largest number of certified workers (1975, p.25). During the first year of TAA under the Trade Act, the GAO found that more than 80 percent of the first 500 petitioners came from unions even though non-union workers accounted for nearly 65 percent of unemployed manufacturing workers in 1975 (1977, p.13). From April 3, 1975 through September 30, 1981, the auto, steel, and apparel industries—all of which are heavily unionized—accounted for 75 percent of all certified workers (see Table 2). Moreover, if we look at certification by major union, we find that over a comparable period (April 3, 1975–October 31, 1982), union members accounted for 76 percent of all certified workers, with the UAW and Steelworkers comprising 57 percent of the total, or 74 percent of certified union workers (see Table 3).[17]

As a result of their active participation in the TAA program under the Trade Act, union workers have captured the bulk of TAA cash benefits. Over the period April 3, 1975–June 30, 1982 (which is comparable to the April 3, 1975–September 30, 1981 period), union workers captured 83 percent of total cash benefits (TRA) paid to all workers, and the union/non-union *total* benefit differential was 4.81. That is, the total amount of TRA paid to union workers over this

[16]It is interesting to note that in FY 1980, auto workers were provided import relief in the form of TRA even though there was only a slight increase in actual imports (CRS 1980, pp. 4–5), and in spite of the fact that the International Trade Commission (formerly the Tariff Commission) determined that imports, *when taken alone,* were not nearly as important a cause of unemployment as the general recession (U.S., International Trade Commission 1980, p. 21; hereafter, ITC).

The positive determination by the Secretary of Labor for the auto workers resulted in a 533 percent increase in TAA program costs between FY 1979 and FY 1980 (see Table 1). Had the Secretary chose to follow a stricter interpretation of the legislative intent behind the "contributed importantly" clause of the Trade Act, as stated in the Senate Finance Committee's report (1974, p. 133), he might have prevented this benefit explosion. Unfortunately, the perverse incentives operating within government drove the Secretary in the wrong direction from the taxpayers' point of view.

[17]An additional 48,698 workers—or only 3.7 percent of the total number of workers certified over the April 3, 1975–September 30, 1981 period—were certified between October 1, 1981 (when the Trade Act amendments reduced benefits) and October 31, 1982. Hence, the figures in Table 3 are still representative of the experience under the pre-amended Trade Act.

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TABLE 2

WORKER CERTIFICATIONS BY MAJOR INDUSTRIES: CUMULATIVE, APRIL 3, 1975–SEPTEMBER 30, 1981

Major Industries (SIC)	Petitions Certified	Est. Workers Certified
Automobiles (371)	556	709,986
Apparel (23)	1,181	141,010
Steel (331)	196	131,695
Footwear (314,3021)	349	73,979
Electronics (365-367)	139	53,701
Fabricated Metal Products (34)	158	34,035
Textiles (22)	185	25,043
Coal (1111,1211)	94	4,398

SOURCE: U.S., Department of Labor, Employment and Training Administration, Office of Trade Adjustment Assistance, *Management Information Report,* October 31, 1982, p. 2.

NOTE: The total number of workers certified from all industries during the April 3, 1975–September 30, 1981 period was 1,310,484.

(approximately) seven-year period was almost five times the amount paid to non-union workers. On a per-worker basis, the benefit differential was 1.41 over this same period. Meanwhile, auto and steelworkers collected 67 percent of the total amount paid out for TRA, with auto workers ranking first, capturing 57 percent of total benefits paid to all workers.[18]

[18]These figures were calculated using data from ETA (1982a). In order to estimate the union/non-union, per-worker benefit differential for the April 1975–June 1982 period, we used the following formula:

$$\frac{B_u}{B_{non-u}} = \frac{\text{TRA paid union workers/no. of union workers paid}}{\text{TRA paid non-union workers/no. of non-union workers paid}}.$$

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TABLE 3

CERTIFICATIONS BY MAJOR UNIONS UNDER THE TRADE ACT OF 1974: CUMULATIVE, APRIL 3, 1975–OCTOBER 31, 1982

Trade Union	Petitions Certified	Est. Workers Certified	Est. Workers Denied Cert.
UAW	257	630,018	97,011
Steelworkers	255	142,463	102,392
ACTWU	348	64,018	22,714
ILGWU	360	29,860	21,263
Shoeworkers	61	16,213	2,672
Machinists	37	14,992	7,942
Elec. Workers IUE	33	11,984	16,135
Boot & Shoe	48	9,967	1,446
Teamsters	19	2,794	3,092
All Other Unions	324	115,763	88,542
Union Totals	1,742	1,038,072	363,209
Non-Union	2,295	321,110	531,790
Grand Totals	4,037	1,359,182	894,999

SOURCE: U.S. Department of Labor, Employment and Training Administration, Office of Trade Adjustment Assistance, *Management Information Report*, October 31, 1982, p. 3.

TRA and Temporary Layoff Unemployment

Martin Feldstein (1978) found that UI provides an incentive for employers to give, and for workers (especially union workers who make above-market wages) to accept, temporary layoff unemployment (pp. 834–835). In particular, he observed a direct relationship between the UI replacement rate—the proportion of net income replaced by UI—and the rate of temporary layoff unemployment, and discovered that this relationship is stronger for union workers (pp. 843–844).[19] We would expect TRA to have similar effects on temporary layoff unemployment. Indeed, since TRA has replaced a greater proportion of net income than UI and has applied primarily to union workers, we would expect a large proportion of TRA recipients to suffer temporary layoff unemployment. Furthermore, we would expect to observe an increase in the amount of temporary

[19]Unlike most studies of UI, Feldstein has focused on the impact of UI on the amount of temporary layoff unemployment, rather than on the duration of unemployment per spell (see 1976; 1978, pp. 834, 844).

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layoff unemployment among TRA recipients after the replacement rate was increased by the 1974 Trade Act.

TRA artificially lowers the price of temporary layoff unemployment to trade-impacted workers by replacing part of their net income during layoff. The greater the TRA replacement rate—the ratio of TRA to a worker's net wage—the lower will be the price of temporary layoff unemployment, and the greater will be the quantity taken by TAA participants, other things equal.

During the Trade Expansion Act, most workers could expect TRA to replace 65 percent of their pre-layoff wage. Union workers who earned a wage in excess of the average manufacturing wage, however, could expect TRA to replace less than 65 percent of their pre-layoff wage. For example, if union workers earned, on average, 115 percent of the average manufacturing wage, their replacement rate under the 1962 law would fall to $\frac{.65\ W_m}{1.15\ W_m}$, or 56 percent.

Under the Trade Act, on the other hand, most workers could expect TRA to replace 70 percent of their gross wage, except for union workers earning 43 percent or more above the average manufacturing wage. For these workers, the replacement rate would fall below 70 percent.[20] The number of workers falling into this category, however, is expected to be relatively small. We conclude that displaced workers expect TRA to replace a significant portion of their net income, and that the Trade Act of 1974 *increased* the expected replacement rate. Thus, we predict a high frequency of temporary layoff unemployment among TRA recipients, especially under the Trade Act (up to the 1981 amendments).

There are three other reasons for expecting a high frequency of temporary layoffs under the TAA program for workers, especially after the 1974 Trade Act. First, we have seen that the great majority of TRA recipients have come from heavily unionized industries, especially the auto and steel industries. Many of these workers (particularly auto and steelworkers) can collect supplementary unemployments benefits (SUB) from their employers in addition to TRA and UI. For example, some auto workers have replaced up to 95

[20]We should note that our estimates are based on gross wage rates, and therefore understate the net replacement rates. We are also assuming that TRA recipients have zero earnings and are not collecting UI. To the extent that they do have earnings and receive UI, their TRA would be reduced by 50 percent of their earnings and by the full amount of UI.

In their study of the first three years of TRA under the Trade Act, Corson et al. (1979) found that the combination of TRA and UI replaced, on average, 75 percent of the income lost by workers suffering temporary layoff unemployment (p. 150).

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percent of their net income by drawing TRA, SUB, and UI.[21] Such a high replacement rate is bound to exacerbate temporary layoffs among these workers. Meanwhile, TRA reduces the cost of temporary layoffs to those employers paying SUB, because they can use TRA to replenish the SUB fund. This has been particularly true in the auto industry where about 50 percent of TRA has been used to repay the SUB fund (GAO 1978a, p.10). These facts suggest that both workers and employers gain from temporary layoffs under the TAA program and, therefore, both have an incentive to opt for temporary layoff unemployment instead of reduced hours or wage cuts. The later two options, of course, are virtually impossible in unionized firms.[22]

Second, the vague criteria used under the Trade Act to determine whether the imports "contributed importantly" to domestic unemployment increased the probability that certified workers would be laid off for reasons other than import competition while collecting TRA. We have seen, for example, that auto workers were laid off in 1980, primarily because of the recession.[23] Employers are reluctant to fire workers during a recession because they do not know if the change in demand for their product is temporary or permanent. They normally assume it is temporary and, therefore, are inclined to give temporary layoffs to workers in order to avoid retraining and rehiring costs.[24] This same reasoning, of course, applies to disruptions due to import competition.

Third, auto and steel union workers have been the most active TAA participants, and earn wages far in excess of what they could earn in their next best alternative. Thus, with TRA replacing a sizeable fraction of their take-home pay, they will be able, in many cases, to earn a larger net income during temporary layoff unemployment than they could if they quit their job and moved to their best alternative employment. We expect that the increased replacement rate

[21]Auto workers, steelworkers, and rubber workers all receive SUB, which is intended to supplement UI (CRS 1981a, p.12). Some union workers (such as those in the primary metal industry) have been able to replace more than 100 percent of their pre-layoff net income by drawing on TRA, SUB, and UI. Unlike auto workers, these workers do not have to use TRA to repay their companies' SUB funds (GAO 1980, pp. 14–15).

[22]Feldstein has noted that union contracts may prohibit employers from reducing hours during a business downturn, in which case they must first provide temporary layoffs. The contract between General Motors and the UAW is one such example (1976, p. 938).

[23]Auto companies have also used TRA to finance temporary layoffs (subsequent to the initial layoff under TAA certification) during model changeovers and inventory accounting (GAO 1978a, pp. 22–23).

[24]This is akin to holding inventories because of random fluctuations in demand. See Alchian (1969). A useful discussion of Alchian's work on "information costs and unemployment" is presented in Baird (1977, ch. 4).

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under the 1974 law should exacerbate temporary layoff unemployment among these workers. This would be reflected in an overall higher rate of temporary layoffs among TAA participants after 1974.

For all of the above reasons, we expect a relatively large proportion of TRA recipients to suffer temporary layoff unemployment, especially under the Trade Act (up to the 1981 amendments). The available evidence is consistent with our hypothesis, and applies to the unemployment experience of TRA recipients under the Trade Act. Corson et al. (1979), in a survey of TRA recipients for Mathematica Policy Research, Inc. (MPR), found that 58.2 percent of TRA recipients suffered temporary layoff unemployment between 1976 and early 1979.[25] And, a GAO survey found that 85 percent of TRA recipients suffered temporary layoff unemployment under the Trade Act, up through late 1978 (1980, p. 10).

One particularly interesting finding of the MPR study was that a larger proportion of TRA recipients (58.2 percent) suffered temporary layoff unemployment relative to a comparable group of UI recipients (39.9 percent).[26] This result is consistent with the theory of temporary layoff unemployment that posits an inverse relationship between the "price" of temporary layoff unemployment to a worker and the quantity demanded, other things equal. Under the Trade Act, TRA recipients could replace, on average, 70 percent of their gross wage during temporary layoff unemployment compared to an average replacement rate of 50 percent for UI recipients. The relatively higher replacement rate for TRA recipients implies a relatively lower price to them of taking temporary layoff unemployment compared to UI recipients. Thus, we would expect to observe a greater proportion of TRA recipients suffering temporary layoffs (under the Trade Act incentive structure) relative to UI recipients.[27]

[25]Reported in Richardson 1980, p. 25. The MPR study was commissioned by the U.S. Department of Labor, Bureau of International Labor Affairs, Office of Foreign Economic Research.

[26]Ibid.

[27]This hypothesis is simply an extension of Feldstein's (1976) theory of temporary layoff unemployment to the TRA case. Feldstein (1978) has used his model of temporary layoff unemployment to test the hypothesis that higher UI, on average, increases the rate of temporary layoff unemployment. He found that an increase in the average level of UI has a significant impact on the temporary layoff unemployment rate: Nearly one-half of temporary layoff unemployment was accounted for by the average level of UI (p. 834). For a useful discussion of the unemployment insurance system and its adverse effects on work incentives, see Browning and Browning (1979, pp. 116–127).

Richardson (1980) hinted at the significance of Feldstein's work on temporary layoff unemployment for analyzing the effect of TRA on layoffs. He noted that larger cash benefits under TAA will "make workers less resistant to layoffs" (p.16, n.16) However, he failed to systematically derive, and formally test, the implication of effective changes

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The Adjustment Failure Under TAA

The job search allowance, relocation allowance, training, and other employability services under the TAA program were designed to facilitate the adjustment of trade-impacted workers to new jobs, while TRA was supposed to ease the burden of adjustment.[28] It is well-known, however, that paying workers to take temporary layoff unemployment in heavily unionized industries has little chance of promoting effective adjustment, especially since union wages typically exceed what these workers could earn in their next best alternative. It is more likely that union workers, and even non-union workers on temporary layoff, will use their layoff for leisure activities (or even "housework") rather than engage in serious job search, relocation, or training activities. This is to be expected because of the high replacement rates under TRA (combined with UI, and SUB). We shall now examine the job search behavior of TAA participants, as well as their use of relocation, training, and other employability services to see if they have promoted or hindered the labor market adjustment process.

Job Search Behavior.[29]—We have already seen that the major participants in the worker TAA program have been union workers, especially auto and steelworkers with wages far in excess of the average manufacturing wage. These workers have predictably used TRA to

in TRA for temporary layoff unemployment among TAA participants. Our hypothesis about the impact of increased TRA on temporary layoff unemployment still awaits a rigorous test. Such a test could be approached using Feldstein's econometric model (1978).

We should also note that Neumann (1976, 1978) in his study of the 1962 law, and Corson et al. in their study of the 1974 law, found that TRA tended to increase the average duration of unemployment, because of the adverse effects TRA had on work incentives. Moreover, Corson et al. found that under the 1974 law, the adverse effect of TRA on the duration of unemployment was stronger than that of UI for a comparable group of workers (p. 91). Neither of these studies, however, systematically examined the effect of changes in the TRA replacement rate on temporary layoff unemployment among TAA program participants.

[28]It is often argued that TAA—government intervention—is necessary because labor markets are not perfectly competitive and transactions costs (including information costs) are high. Under such conditions, private markets will not respond quickly enough to import competition, and large-scale unemployment will result. The government, by providing better information (counseling) and aiding in the adjustment process, is supposed to mitigate the unemployment effects of import competition (see Aho and Bayard 1980, pp. 360, 367–368; McCarthy 1975, p. 25). We shall discuss the flaws in this line of argument at a later point in the paper.

[29]A useful summary of the theory of job search is provided by Baird (1977, ch. 4). For a more detailed analysis, see Stigler's pathbreaking article, "The Economics of Information" (1961), and Alchian (1969).

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support their above-market wage rates while taking temporary layoffs. Non-union workers also have generally used TRA as an income support program during temporary layoff.[30] However, let us focus on union workers since their job search behavior will have the greatest impact on the success of the TAA program to promote adjustment to import competition.

A displaced worker's incentive to search for new employment will depend on the expected costs and benefits of job search, i.e., on the net benefits he expects from his additional search activity. The job search allowance (paid after the enactment of the 1974 Trade Act) artificially lowered the cost of search. Ordinarily this would have encouraged greater search activity; however, in the case of union workers suffering temporary layoff unemployment, there is little reason to expect them to increase their job search activity. There are two reasons for this. First and foremost, the fact that a union worker's wage exceeds the competitive wage that he could earn in his next best alternative (often by a substantial amount) means that the expected benefit of job search to the union worker is negative—he would incur a loss of income by leaving his union job and moving to non-union employment. Thus, he has no incentive to hunt for a new job during his spell of temporary layoff unemployment.

Second, the fact that the union worker expects his spell of unemployment to be temporary means that he will simply wait to be recalled to his former (higher-paying job) rather than search for a lower-paying job. Under these two conditions, it is highly unlikely that union workers would utilize the job search provision of the Trade Act.

With respect to non-union workers, we can state that insofar as they expect temporary unemployment, and insofar as they are paid a competitive wage (equal to what they expect in their next best alternative), we would predict little job search activity among these workers while they are eligible for TRA.[31]

The existing evidence is consistent with our predictions about job search behavior and adjustment to import competition under the Trade Act. In the MPR survey, Corson et al. (1979) found that only

[30]For a detailed discussion of the use of worker TAA as an income maintenance program, see GAO (1978b).

[31]Martin Feldstein has remarked that "the theory of job search is largely irrelevant" for workers suffering temporary layoff unemployment (1976, p. 938; also see p. 955). We have shown that in the case of temporary layoff unemployment, the theory of job search can be used to predict zero job search. Thus, instead of seeing job search theory as irrelevant in the case of temporary layoff unemployment, we have sought to expand the theory to include this case.

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15.6 percent of the TRA recipients in their sample had shifted to a new industry, and only 25.1 percent had changed their occupation.[32] Meanwhile, the GAO survey (1980) found that of the 85 percent of TRA recipients who had suffered temporary layoff unemployment during the first several years of the Trade Act, 67 percent had returned to their former employer, and many to their former job (pp. 10–12).

These findings indicate that there was very little positive adjustment to import competition among TRA recipients under the Trade Act. This was especially the case for auto workers: The GAO found that out of 18,198 auto workers who had applied for TRA up through June 30, 1976, only one had received a job search allowance. Moreover, after briefly attempting two jobs outside the auto industry, this "trade-impacted" worker was reemployed with Chrysler (1978a, p.7). Such erratic employment behavior helps explain why "outside" employers are reluctant to hire laid-off union workers.

A GAO survey (1978b) of New England TRA recipients provides further evidence that under the Trade Act, TRA was primarily used to support above-market wages of trade-impacted workers suffering temporary layoff unemployment. Although most of the New England TRA recipients had limited skills and education, they were unwilling to take wage cuts in order to find new employment. Their unwillingness, of course, stemmed from the expectation that their job separation would be temporary and that most of them had wage rates in excess of what they could earn in their next best alternative. Hence, most of the New England TRA recipients in the GAO sample either waited for recall or exhausted their cash benefits before searching for work. There was, in fact, no use of the job search allowance by the 239 TRA recipients in the GAO sample, which covered the April 3, 1975–December 31, 1976 period. In one revealing case, a group of TRA recipients who had been making $4.00 per hour refused to move to their next best alternative since it paid only $2.75 per hour—they could make more by taking "layoff" (leisure) and collecting TRA. Indeed, when they learned that their TRA might be taken away if they refused to take the lower-paying jobs, they demonstrated outside their local SESA office (pp. 18–22).

The above example indicates that TRA helped reinforce the downward rigidity of wages and effectively blocked any incentive for workers to adjust to import competition for the duration of their benefit period. As one SESA official observed:

> The [TAA] program sure does not provide the affected workers any incentive to actively seek employment. Once these workers adjust

[32]Reported in Richardson (1980, p. 25).

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> to receiving somewhat lower payments [income] than they did if [when] they were working, they just do not actively seek employment until they are forced to. (GAO 1978b, p. 22)

More recent evidence also confirms our hypothesis about worker adjustment under the Trade Act incentive structure. Of the 1,320,733 workers who received TRA during the April 3, 1975–September 30, 1981 period under the Trade Act, only 5,133 or .39 percent engaged in job search, as measured by the number of workers receiving job search allowances (calculated from Table 4). If we included the period up through June 30, 1982, the ratio of job searchers to TRA recipients increased to 3.24 percent. This is a significant increase, but still a minor fraction of the total number of workers receiving TRA under the Trade Act over this period. The increase can be attributed to the 1981 amendments that decreased TRA and the greater emphasis on job search activity by the Reagan administration. The total amount spent on job search aid over the April 3, 1975–June 30, 1982 period (which is comparable to the April 3, 1975–September 30, 1981 period) was $1,818,612, compared to over $3.9 billion spent on TRA.[33]

It is of particular interest to note that over the April 3, 1975–June 30, 1982 period, only .24 percent or roughly two out of every 1,000 auto workers engaged in job search activity. Likewise, over the same period, only .88 percent or roughly nine out of every 1,000 steelworkers engaged in job search activity while collecting TRA.[34] This confirms our hypothesis that *union* workers receiving above-market wage rates and suffering temporary layoff unemployment are unlikely to search for new employment under the Trade Act income support program.

Relocation, Training, and Other Employability Services.—*Workers* will relocate only if they expect to be made better off in terms of their total net income (pecuniary and nonpecuniary) over the long run. Thus, workers suffering temporary layoff unemployment and collecting TRA are not likely to relocate, especially union workers receiving relatively high wage rates (compared to what they could earn elsewhere). Also, non-union workers may not want to relocate because they are attached to their particular location and would rather wait out a spell of temporary unemployment than move. Even many workers facing permanent layoff will use relocation only as a last resort. For all these reasons, we would expect to observe very

[33]The data for the April 3, 1975–June 30, 1982 period were taken from ETA (1982a).
[34]Calculated from ETA (1982a).

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TABLE 4

WORKER ADJUSTMENT UNDER THE TRADE ACT OF 1974

EMPLOYABILITY SERVICES[a]	Fiscal Years						
	1981	1980	1979	1978	1977	1976	Transition Quarter
Applications for ES	79,839	179,045	59,080	74,594	24,373	16,345	7,797
Placements	7,167	9,000	8,695	6,352	2,677	711	926
Entered Training	20,386	9,475	4,458	8,337	4,213	823	463
Completed Training	5,527	2,910	3,884	3,915	912	189	140
SESA Placements After Training	569	1,039	781	729	423	23	28
Job Searches	1,491	931	1,181	1,072	277	23	158
Relocations	2,011	629	855	631	191	26	44
Counseling	68,422	60,989	24,794	28,922	15,571	5,724	2,320
Supportive Services	—	4,276	5,767	4,351	822	16	—

SOURCE: U.S., Department of Labor, Employment and Training Administration, "Trade Adjustment Assistance Key Facts by Fiscal Year," January 1982.

[a]To be eligible for employability services (ES), workers must first be certified and eligible for TRA. A total of 1,320,733 workers received TRA during the April 3, 1975–September 30, 1981 period (see Table 1, p. 875).

little use of relocation allowance under either the Trade Expansion Act or the Trade Act. Finally, since most TRA recipients expect temporary layoff unemployment and are union workers, we would not expect them to use their layoff time for training or for actively utilizing the other employment services available through the TAA program.

Once again, the available evidence is consistent with our predicted behavior. McCarthy, for example, found that of the 185 Massachusetts shoe workers who were displaced by import competition, only one had received a relocation allowance under the 1962 Trade Expansion Act. Workers were simply not interested in relocating, and the few that were faced high transactions costs in obtaining benefits (1975, pp. 26, 28). Relocation activity was also negligible after the 1974 Trade Act took effect. Between April 3, 1975 and September 30, 1981, only 4,387 displaced workers collected relocation benefits out of 1,320,733 TRA recipients. This amounted to a mere .33 percent of all eligible workers utilizing job relocation benefits (see Table 4). Exactly the same percentage response characterized the comparable April 3, 1975–June 30, 1982 period. During the later period, the total cost of relocation allowances was $7,416,211.

As expected, auto and steelworkers barely used the relocation allowance program under the Trade Act. Over the April 3, 1975–June 30, 1982 period, only .29 percent of the auto workers and .64 percent of the steel workers utilized relocation allowances.[35] Hence, it can be said with confidence that these workers had little incentive to adjust and relocate under the perverse incentives of the TAA program.

With respect to training, McCarthy found that under the 1962 Trade Expansion Act, as it was utilized by Massachusetts shoe workers, only one worker out of 185 displaced shoe workers entered an approved training program (1975, p. 26). Table 4 indicates a similar lack of participation in training by TRA recipients during the 1974 Trade Act (up to the 1981 amendments). Indeed, only 3.65 percent of all TRA recipients entered training over the April 3, 1975–September 30, 1981 period. Of these, only 7.46 percent completed training and were placed by their local SESA. The Reagan administration hopes to increase participation in the training program, and allocated a major portion of the TAA budget in FY 1982 (approximately $25 million out of $101.63 million) for training. The same amount has been allocated for FY 1983.[36]

[35]Ibid.

[36]Estimates obtained from the U.S. Department of Labor, Employment and Training Administration, Office of Trade Adjustment Assistance.

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Finally, there has been relatively little use made of the other employment services under the Trade Act (see Table 4). Counseling was used by 15.65 percent of all TRA recipients over the April 3, 1975–September 30, 1981 period. However, this has little significance for worker adjustment to import competition, as indicated by the very limited use made of job search, relocation, and training benefits.

Summary.—The sharp growth in the worker TAA program under the 1974 Trade Act (up to the 1981 amendments) was characterized by active union participation, especially among auto and steelworkers. These workers used TRA to support their above-market wage rates while taking temporary layoffs. They did not adjust to import competition as intended by the TAA program.[37] Virtually no use was made by either union or non-union workers of the job search, relocation, or training provisions of the Trade Act over the April 3, 1975–September 30, 1981 period. Consequently, there can be no doubt that the TAA Program for workers represents a case of government failure.

Instead of promoting worker adjustment to import competition, the TRA component of TAA has hampered adjustment by supporting anti-competitive union wage rates. No serious effort has been made by politicians to make labor markets function more smoothly by increasing wage flexibility. Union coercion, minimum wages, the Davis-Bacon Act, licensing, and the like, have all been left untouched by the Reagan TAA reform measures. Unless government policy is aimed toward making labor markets more competitive by removing existing barriers to entry, prices and profits will fail to effectively perform their information and incentive functions. Under such conditions, the unemployment effects of import competition will be exacerbated by programs such as TAA.[38]

[37]In 1974, the House Ways and Means Committee stated that: "The basic purpose of a program of benefits to trade-impacted workers . . . is to assist their adjustment to reemployment in the same or different industry, as opposed to providing compensation for unemployment." (U.S., Congress, House 1974; cited by CRS 1981a, p. 10)

[38]One unintended effect of TAA under the 1974 Trade Act may have been to increase unemployment in heavily unionized industries like autos and steel, which are subject to strong import competition. The Trade Act increased the union/non-union, per-worker TRA differential, allowing union workers to collect weekly cash benefits up to the average manufacturing wage. If union leaders had recognized the link between increased union wages, an increased average manufacturing wage, and increased TRA, they may have pushed union wages up faster than in the absence of TAA. Such a tactic may have exacerbated union unemployment in import competing industries (though, of course, there are other significant explanatory variables that we have omitted from our analysis, and that would have to be taken into account in any formal testing procedure), and increased the rate of growth of TRA.

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TAA and Free Trade Policy

U.S. trade policy has been characterized by a series of carefully planned or negotiated steps designed to promote freer trade by compensating special interest groups. TAA has been part of this negotiations approach to trade liberalization.[39] Both the Trade Expansion Act of 1962 and the Trade Act of 1974 were intended to minimize the use of the escape clause by providing adjustment assistance to workers and firms injured by import competition.[40] Moreover, the Trade Act of 1974 was designed to promote "fair and free competition between the United States and foreign nations," where fairness was generally interpreted to mean that those groups who could not compete internationally ought to be compensated. In particular, it was argued that under existing institutional arrangements, TAA was necessary to bribe unions and trade associations into accepting trade liberalization—the institutional environment was taken as given.[41]

The negotiations approach to trade liberalization and the bribery argument are seriously flawed. They fail to recognize that as long as special interest groups can gain by using the power of government to enact laws designed to further their goals at the expense of the public, these groups will have no incentive to accept the free trade principle. Thus, without fundamental institutional reform in which the coercive power of government and special interest groups is limited by law, there is little reason to expect programs like TAA to effectively promote trade liberalization *in the long run*. Indeed, under the bargaining approach to freer international trade, we would expect

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The evidence is consistent with this hypothesis. In FY 1977, only 10.8 percent of workers filing for TRA were unemployed, while 61.2 percent were unemployed in fiscal year 1981 (see Table 1). Moreover, we know that there was a large increase in the growth of TRA under the Trade Act, especially among union workers. Cf. Feldstein (1976), who found that the UI subsidy decreased work incentives and enlarged the unemployment effects of reduced demand (pp. 949–954).

[39]Yeager and Tuerck (1966) discuss the negotiations, or bargaining, approach to freer international trade and compare it to the unilateral, or principled, approach to trade liberalization. This section draws on their excellent study. With respect to the negotiations approach, the authors state that under it the movement to freer trade becomes "an international issue to be hesitated and shrewdly negotiated about, something to be carefully measured and reconsidered and sometimes escaped from and reversed. Trade cannot be left free, it seems; it must submit to governmental and international planning" (p. 265). In contrast, an "[a]cross-the-board liberalization could be made a matter of principle and avoid the unprincipled wrangling of a piecemeal produce[t]-by-product approach" (p. 275).

[40]See Richardson (1980, pp. 8–9); McCarthy (1975, p. 25).

[41]For a discussion of this argument, see Richardson (1980, p. 8); Aho and Bayard (1980, esp. pp. 359–360, 365).

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trade unions and industry associations to view TAA as a temporary import relief measure, while continuing to press for more permanent protectionist measures in the form of tariffs, quotas, orderly marketing agreements, and so on. In the following discussion, we will first examine the failure of TAA to promote a permanent commitment on the part of unions and industry groups to the free trade principle, and then discuss the benefits of a principled approach to free trade.[42]

Failure of the Negotiations Approach to Trade Liberalization

Although foreign trade has expanded during the TAA program, there has been no *permanent* commitment to freer international trade on the part of legislators, trade unions, or business groups. These groups have adopted the rhetoric of free trade, without taking the steps necessary to implement the principle of free trade. Unions and trade associations have no incentive to adopt measures that promote freer international trade when these same measures threaten to put them out of business. Meanwhile, legislators have sought the support of powerful unions and trade groups in order to further their chances of reelection by a public that is largely ignorant of the economic arguments for free trade. Charles Vanik, a congressman from Ohio, has remarked that: "[T]rade support on the Hill is fragile—there are 100 members of Congress who don't believe in trading with anybody. A majority in opposition to free trade can be achieved if labor is alienated."[43]

Vanik's prediction is coming true in the form of "voluntary" quotas on Japanese auto exports, the use of antidumping laws to limit the importation of steel, new restrictions on sugar imports, rising protectionism in the textile and computer industries, and the possibility of domestic content legislation being enacted for the auto industry in 1983. Indeed, with the winding down of the TAA program, we can expect an increasing demand by unions for safeguards against foreign competition. If the International Trade Commission does not respond by granting import relief, Congress is likely to take actions on its own to satisfy various constituencies. And, the President is likely to go along. (Cf. CRS 1981a, p.3).

Special interest groups have been very successful in selling their

[42]In addition to discussing the value of a principled approach to trade liberalization (in 1966, esp. chaps. 1,4, and 16), Yeager has considered the implications of a principled approach to public policy in general, and the role of an economist as policy adviser. In particular, see Yeager (1976 and 1978). I have benefited greatly from his many insights, and draw on them in my policy recommendations.

[43]Quoted in *Barron's*, May 5, 1980. Representative Vanik was chairman of the House Subcommittee on Trade.

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protectionist schemes to legislators and the public. They claim that foreigners compete unfairly, and that their own particular product or skill is essential for the domestic economy's well-being. Thus, they argue that government, as protector of the "public interest," should provide safeguards against foreign competition, and do so on a case-by-case basis. At the same time, these groups claim to support a free trade philosophy. The following examples of such "double talk" illustrate the failure of the negotiations approach under TAA to win the firm committment of trade unions and industry associations to the free trade principle.

- In the Senate Finance Committee's hearings on the Trade Expansion Act of 1962, the Executive Secretary of the United Hatters, Cap and Millinery Workers International Union claimed that his industry was "unique" and essential to the U.S. economy. He sought protection from "unscrupulous" foreign competition by disregarding the principle of comparative advantage and the gains to consumers from specialization and trade, and arguing that: "This is not an industry where any one country has an advantage over another because of unique natural resources." Rather, "[t]he history and character of the economic situation of the domestic fur felt hat body industry . . . requires special consideration." (U.S., Congress, Senate 1962, pp. 970–974)
- In the same Senate hearings, the Aluminum Wares Association argued that it supported free trade, but needed "certain safeguards" for its workers and producers. In particular, the association representative stated that "[trade] legislation should only be predicated on providing the ability for domestic industry to compete" with foreign producers. He emphasized that TAA would not provide adequate relief from foreign competition, and that "such 'assistance' would be unnecessary if adequate safeguards" were enacted to protect his industry. Most interestingly, he ended his policy statement by declaring that: "No self-respecting domestic firm or industry wants to be forced to abandon the principles of 'free enterprise' and live on a government subsidy regardless of how it is handed out." (U.S., Congress, Senate 1962, pp. 1014–1018)
- The absence of any real commitment to freer international trade under TAA is further evidenced by the following testimony in favor of H.R. 1543, a bill introduced by Representative Vanik in 1979 to liberalize TAA.[44] Arthur J. Sambuchi, a union representative for steelworkers at Bethlehem Steel's Lackawanna, N.Y. plant, stated: "[W]e

[44]For the legislative history of this bill, which initially passed the House but was never enacted, see CRS (1981a, pp. 2–3).

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recognize, accept and welcome a Free Trade economy, if it could only be a fair trade economy! And at the same time, we anticipate and expect the adjustment assistance that was granted to us by the Trade Act of 1974. Nothing more, and most certainly, nothing less!" Sambuchi then went on to defend his union's relative share of the national income: "Steelworkers are a proud and industrious breed. Our fathers and their fathers . . . contributed mightly to the growth, preservation and status of America. . . . However, today we reluctantly accept the fact that perhaps we are now secondary and perhaps tertiary in the world industry of steel producers. *But we also recognize that it is paramount that we selfishly guard what we have retained*" (U.S., Congress, House 1979, p. 39; emphasis mine).

These examples, which could easily be duplicated a hundredfold, serve to demonstrate the stiff resistance to freer trade on the part of unions and protected industries. With respect to unions, we have seen that they have used TRA primarily to support their above-market wages during temporary layoff unemployment. They have never supported a permanent shift to free trade; such a move would conflict with their desire to protect their relative income share, which could not be maintained in a free-market environment. TAA has simply allowed union leaders to buy some time to plan for more permanent protectionist measures.[45]

At a cost of nearly $4 billion (over the April 3, 1975–June 30, 1982 period), the TAA bribe to union workers has been an expensive failure.[46] More important, however, is the loss of individual freedom that has resulted from government intervention under TAA: Taxpayers have been forced to support the coercive wage gains of union workers affected by import competition; and, workers who have suffered unemployment unrelated to import competition have been treated differently than trade-affected workers.

[45]These points were brought out in the GAO's interviews with union leaders (1978b, pp. 18, 22).

[46]The argument that the social benefits from trade liberalization under TAA have outweighed the cost of bribing union workers is ill-founded. Such a benefit-cost calculation is impossible, given the subjectivity of benefits and costs, and the underlying interpersonal utility comparisons that cannot be avoided in such a calculation. As Hayek has emphasized: "[T]he aim of what is called 'welfare economics' is fundamentally mistaken, not only because no meaningful sum can be formed of the satisfactions provided for different people, but because its basic idea of a maximum of need fullfillment (or a maximum social product) is appropriate only to an economy proper which serves a single hierarchy of ends, but not to the spontaneous order of a catallaxy [an exchange economy] which has no common concrete ends" (1980, p. 173). See Aho and Bayard's study of TAA as an example of the benefit-cost approach to trade liberalization (1980). In considering their study, we can think of the cost of TAA as essentially the cost of bribing union workers.

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Both the Trade Expansion Act and the Trade Act have opened the door for numerous exceptions to the free trade principle, such as escape clauses, antidumping provisions, and negotiated limits on foreign exports. Moreover, since the President can cancel a trade agreement at any time, and industry or organized labor can petition for import relief whenever they perceive "serious injury" from foreign competition, it is obvious that individuals will have little incentive to adjust to freer international trade. Industry and labor leaders can spend their time more profitably lobbying for compensation packages and protectionist legislation than pushing for trade liberalization, which will make their lives more difficult. Thus, Yeager and Tuerck have pointed out that the bargaining approach to freer trade actually defeats the purpose of free trade by sanctioning "exceptions to the principle of freedom of trade." Furthermore, "this method of moving towards freer trade, instead of limiting the scope of politics, as a free market is supposed to do, broadens it" (1966, pp. 281–282).[47]

The lack of a credible free trade policy has resulted in government attempts to buy votes for free trade from special interest groups. This policy has been a dismal failure as evidenced by the growing sentiment for protectionism. Our current trade policy is like a ship without a rudder, and we continue to drift away from the principles of a free society. What is the answer?

A Principled Approach to Free Trade

To get us back on course toward a free society in which consumers' preferences dictate what is to be produced and who is to perform what jobs, requires a principled approach to free trade, under which the United States would unilaterally adopt a permanent free trade policy. Unlike the negotiations approach, which exhibits a basic mistrust of economic freedom and a misunderstanding of the coordinating function of market prices, the principled approach would rest on an understanding of spontaneous economic order and the mutual gains from *voluntary* exchange.[48] Most importantly, it would require that government protect private property and preserve free-

[47]Yeager and Tuerck cite the Trade Expansion Act of 1962 as an example of the negotiations approach to trade liberalization. According to them, the TEA was supposed to promote freer trade, but actually enlarged the President's power "to negotiate and enforce agreements" that would restrict international trade (1966, p. 5).

[48]For a discussion of these points, see Yeager and Tuerck (1966, esp. pp. v, 276, 281; also, chaps. 1,2,4,16); and Yeager (1976; 1978).

The notion of a spontaneous economic order and the institutional requirements for its existence have been discussed at length by Hayek (esp. 1972; 1980, chaps. 6,11). For an excellent essay on "The Tradition of Spontaneous Order," see Barry (1982).

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dom of contract, instead of protecting special interest groups. Without government intervention, individuals would be responsible for their own well-being, and have a strong incentive to adjust to foreign competition.[49]

A principled approach to free trade would result in economic harmony rather than the disharmony of the present bargaining approach to freer trade.[50] As Yeager has pointed out:

> The principled approach to economic policy recognizes that the task of the policymaker is *not* to maximize social welfare, somehow conceived, and *not* to achieve specific patterns of outputs, prices, and incomes. It is concerned, instead, with a framework of institutions and rules within which people can effectively cooperate in pursuing their own diverse ends through decentralized coordination of their activities (1976, p. 560).

A unilateral move to free trade by the United States would give the rest of the world a clear signal of our commitment to free trade. Such a policy shift, note Yeager and Tuerck, "might do more for the cause of worldwide free trade than years of negotiations. It would avoid putting the stamp of approval on the protectionist ideas that show up in the inevitable exceptions and reservations and escape clauses of international agreements" (1966, p. 274).

We might also point out that without government adjustment assistance, new private arrangements would emerge to deal with the risks inherent in free international trade. Private insurance, for example, could replace TRA and UI. Those employments with relatively high risks of temporary layoff unemployment would command relatively higher wages than more stable jobs. Workers desiring the higher, but more unstable, wages in import-competing jobs could use part of their income to purchase unemployment insurance, thereby hedging against the risk of fluctuating employment and income. Without government support, workers in high-risk employment would have a strong incentive to purchase such insurance and/or save a larger fraction of their income.[51] Under a private insurance scheme, indi-

[49]Yeager and Tuerck have observed that one of the major advantages of a unilateral shift to free trade would be to change individuals' expectations and induce them to adjust more rapidly to the free-trade environment (1966, pp. 234–236, 275).

[50]For a classical treatment of the disharmonies that result from government intervention with free trade and the harmony of the free market system, see Bastiat (1964a, esp. chaps. 1,4,7; 1964b).

[51]For a discussion of how UI subsidizes unstable jobs and how its elimination would increase wage rates in these employments, see Browning and Browning (1979, pp.123–124). The authors also discuss Feldstein's proposal to replace UI with government loans, and consider the possibility of completely abolishing UI. Here the authors note that a private unemployment insurance system, financed out of personal savings and based on average replacement rates under UI, would require less than 12.5 percent of a worker's yearly income (pp.128–129).

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viduals would be free to vary the amount of unemployment insurance according to their job situations and preferences for risk. Moreover, insurance premiums would vary with the degree of risk, and this information could be used by workers to evaluate the riskiness of different employments.

Conclusion

We have seen that the perverse TAA incentives under the Trade Expansion Act of 1962 and the Trade Act of 1974 (up to the 1981 amendments) discouraged trade-impacted workers from seeking alternative employment. In addition to this adjustment failure, the cash benefits paid to union workers failed to persuade them to adopt the free trade principle.[52] Although the Reagan administration's reform of TAA has significantly reduced program costs, it has done nothing to decrease the underlying impediments to freer trade and wage-price flexibility. Union workers continue to use their coercive power to gain wage hikes in excess of what they could earn in their next best alternative, thereby distorting market prices and diverting resources from the uses most preferred by consumers.[53] Likewise, without constitutional constraints limiting government to the protection of person and property, politicians continue to respond to calls for protectionism from unions and trade associations.

Instead of fundamental institutional reform, Congress has approached the TAA adjustment failure by extending UI to trade-impacted workers and placing more emphasis on training. Legislators

[52]Likewise, firms that received TAA failed to adjust to import competition and did not give up their efforts to secure protectionist measures. For a general discussion of the TAA program for firms, which was a rather modest program compared to the TAA program for workers, see GAO (1978c); U.S., Congress, House (1979, p.3); Richardson (1980).

[53]For an interesting discussion of the effect of unions on "consumers' sovereignty," see Hutt (1975, chap. 5). In his discussion, Hutt asks about the "justice to consumers" and the "justice to workers laid off" as a result of union wage hikes. He notes that the question of "justice" to these individuals is seldom considered (p. 84).

Justice in the sense used by Hutt, of course, refers to the prevention of *injustice;* namely, the protection of a person's justly acquired property—property that is obtained via voluntary exchange, homesteading, gift, or bequest. On the notion of justice as a negative concept, see Hayek (1980, esp. pp. 166–168); Bastiat (1964a, pp. 65–66). On the inseparability of justice, properly understood as the prevention of injustice, and liberty, see Bastiat (1964a, pp. 109–110, 129). As a general reference on the legal philosophy of Hayek and Bastiat, see Dorn (1981).

Finally, with respect to union workers' contention that they have a right to protect their relative income share even though it was obtained, in part, through coercion, note Hayek: "In a market order the fact that a group of persons has achieved a certain relative position cannot give them a claim in justice to maintain it" (1980, p. 173).

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and their economic advisers hope these "design changes" will improve workers' adjustment to import competition.[54] However, as Richardson has remarked: "[O]ne of the surest ways to bring about adjustment would be to provide no assistance" (1980, p. 16).

In addition to their failure to attack free-trade barriers in the domestic labor market—especially coercive union tactics, minimum wages, and licensing—the Reagan administration and Congress have failed to attack the negotiations approach to freer international trade. The "constructivist" attitude that freer international trade must be negotiated on a piecemeal basis and must be planned by government officials, union leaders, and trade associations still prevails.[55] This attitude conflicts with the notion that: "[U]nder the enforcement of universal rules of just conduct, protecting a recognizable private domain of individuals, a spontaneous order of human activities of much greater complexity will form itself than could ever be produced by deliberate arrangement" (Hayek 1980, p. 162).

The major policy conclusion of this study is that to avoid the

[54]Most observers of the TAA program for workers have concluded that its compensation scheme (TRA) prevented the effective use of its adjustment provisions (job search and relocation allowances, training, and other employment services). However, many critics also see a need for continued government intervention to help workers adjust to freer international trade. They base their case for intervention on the fact that labor markets diverge from the norm of perfect competition, and that information is costly. Consequently, they want government to design a better adjustment system, while taking existing institutional rigidities as given—political acceptability dictates this. As an example of this type of reasoning, see Aho and Bayard (1980, esp. pp. 367–371). For a criticism of the use of perfect competition as a policy norm, see Hayek (1948, chap. 5; 1978, chap. 12); Kirzner (1973, esp. chaps. 1–3).

[55]Hayek sees "constructivism" as a "kind of naïve rationalism" that represents a social engineering approach to public policy. It is the attitude that social order can only come about via central planning (1980, p. 85; also, see 1978, chaps. 2–3). Yeager and Tuerck describe the negotiations approach to freer international trade in terms of this constructivist attitude, though they refer to it as "scientism"—a term Hayek reserved to describe a methodology whereby the methods of the physical sciences are inappropriately applied to the study of human action. For a discussion of "scientism," see Hayek (1980, p. 85; 1952); Shenfield (1976, chap. 3).

According to Yeager and Tuerck, the bargaining approach to trade liberalization is characterized by: "[A] passion for doing things conspicuously, a vague feeling that results somehow don't 'count' unless they have been specifically planned and arranged for and unless some definite party or organization or agreement gets credit for them. This passion for spurious tidiness links with failure to understand the coordination and orderliness that emerge spontaneously in a market economy" (1966, p. 281).

An interesting example of the constructivist attitude toward trade liberalization is found in David J. Steinberg's testimony during the Hearings on H.R. 1543. Ironically, as President of the U.S. Council for an Open World Economy, Mr. Steinberg argued for "a deliberate free trade policy," characterized by "an overall national adjustment strategy." He added that he represented "the interest of the Nation as a whole" (U.S., Congress, House 1979, pp. 81–83).

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adjustment and trade liberalization failures that have characterized the TAA program, we must adopt a principled approach to free trade, and to public policy in general. Such an approach requires an "economic education revolution" as a precondition for the implementation of constitutional reform that would limit the coercive power of government to the protection of person and property.[56] Leaders of public opinion will have to acquire an understanding of the principle of comparative advantage, and the gains from specialization and free trade. In addition, they will have to learn the importance of competitive prices and profits for generating useful information about wants, resources, and technology, and for coordinating economic behavior in line with consumers' preferences. Finally, the media, and other specialists in information dissemination, will have to discover the importance of private property and freedom of contract for generating spontaneous economic order, and recognize the impossibility of duplicating the free-market outcome via central planning.[57]

Once individuals begin to acquire a better understanding and appreciation of economic freedom and the distortions caused by government attenuation of private property and freedom of contract, they will have a greater incentive to limit the coercive power of government. Legislators will then have a greater incentive to pursue fundamental reform, since they will find it more costly at the ballot

[56]Yeager and Tuerck have emphasized that: "The core of a free-trade campaign must be economic education. Protectionist fallacies must be exposed often enough and simply enough to win a foothold for understanding outside of academic circles. It is not beyond hope that several hundred thousand or even several million Americans can come to understand the logic of the price system, the gains from trade, and comparative advantage. Eventually they will see that the clash of interests in tariff matters is not between Americans and foreigners but between each particular group of producers on the one hand and the rest of the American people on the other" (1966, p. 276).

The writings of Frédéric Bastiat (esp. 1964a and 1964b) would be an appropriate starting point in educating the public on the importance of free trade and minimum government. According to Bastiat, the "rule of justice" requires that government limit the use of coercion "to guaranteeing and safeguarding property rights" (1964a, pp. 94,98; 1964b, p. 457). Markets will then function smoothly so that individuals' plans (or interests) will "tend to adjust themselves naturally [spontaneously] in the most harmonious way" (Bastiat 1964a, pp. 123,136).

[57]On the "dynamic"gains from freer international trade, see Yeager and Tuerck (1966, pp. 62–67). On the role of the price system in disseminating useful information and coordinating individual plans, see Hayek (1948, chaps. 2,4). On the importance of private ownership and freedom of contract for the generation of a free market order, see Hayek (1972); Mises (1966); Sanborn (1972, esp. chap. 10). On the notion of spontaneous order, see Hayek (1980, chaps. 6,11); Barry (1982). And, on the impossibility of rational economic calculation under socialism, see Hayek (1948, chaps. 7–9); Mises (1981, esp. chaps. 1, 5–11).

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box to disregard consumers' preferences for trade liberalization and limited government. On the other hand, if such a "revolution" does not occur, we are likely to continue to drift toward increased protectionism by allowing "temporary" import relief (either legislated or "voluntary"). This will be especially true if unemployment in unionized, import-competing industries grows, for whatever reason. The end result will be to lessen freedom and prevent the price system from effectively coordinating economic behavior.[58]

One final point. It will probably be said that our principled approach to public policy, and to trade liberalization in particular, is politically unrealistic and, therefore, should not be considered as a viable policy alternative. There are two responses to this criticism. First, it can be pointed out, as Yeager and Tuerck have done, that: "Resistance to cumulative [policy] drift weakens when not only politicians but even social scientists make a fetish of recommending only policies they consider politically 'realistic' " (1966, p. 79).

Second, and more important, it should be noted that the "realism" argument against a principled approach to public policy is a red herring—it diverts attention away from the duty an economist has to promote sound economic reasoning regardless of its political feasibility. His policymaking role should not be divorced from his intellectual integrity. Economics teaches us to look at the long-run consequences of public policy, while ethics teaches us to promote those policies that are consistent with individual freedom. Insofar as the quest for "realism" replaces these standards of judgment, an economist as policymaker will have to sacrifice his principles for short-run political support. This kind of "realism" is clearly unethical, and not in the best interests of a free society.[59]

[58]The disharmony caused by protectionism has been clearly stated by Yeager and Tuerck: "Protectionism injects government decisions into trade, mixes business and diplomacy, widens the range of possible international frictions, and raises private frictions into intergovernmental frictions" (1966, p. 85). One need not look far to see the truth of their statement.

[59]Clarence Philbrook has developed these ideas in his insightful article on " 'Realism' in Policy Espousal" (1953). Indeed, he goes so far as to say that taking an extreme "realism" position in policy espousal can "render the field of political economy not merely useless but actually damaging to the social welfare" (p. 847). Yeager and Tuerck expounded on Philbrook's ideas and noted the immorality of misguided "realism" (1966, pp. 282–285). Also, see Yeager (1978).

On the importance of taking the long-run view, and on the relationship between economics and ethics, see Bastiat (1964a, esp. chaps. 1,2–4,6,8); Hazlitt (1972); Yeager (1976). And, on the importance of ethical theory and its relation to law and economics, see Pilon (1979a–d).

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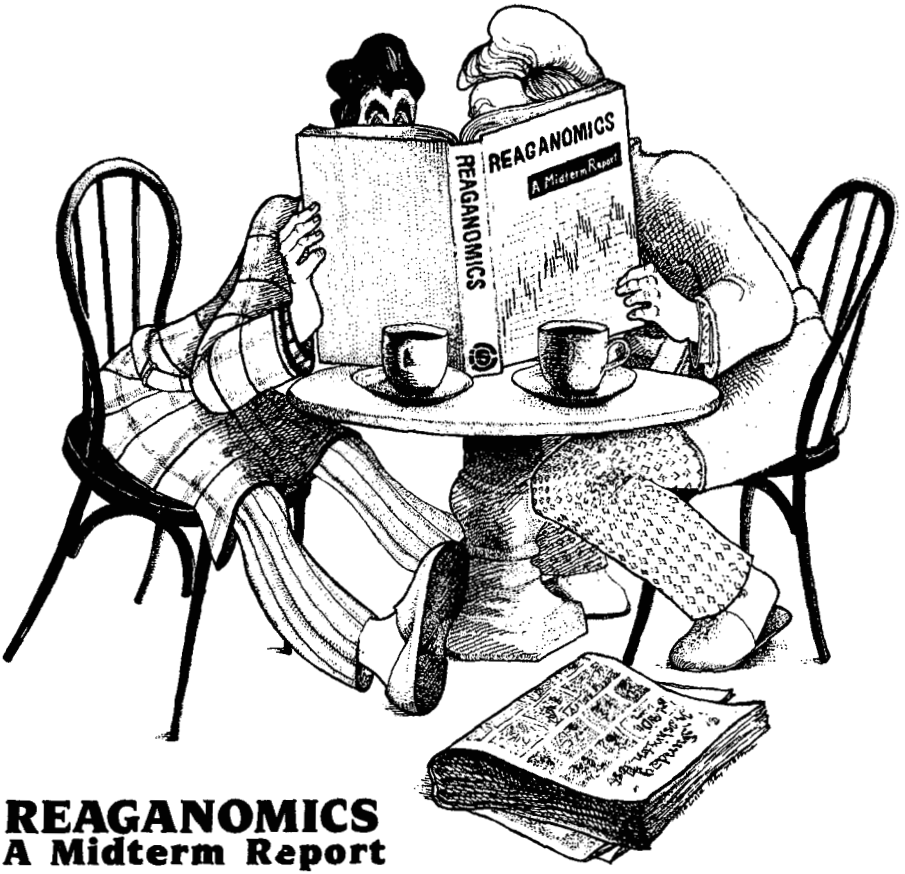

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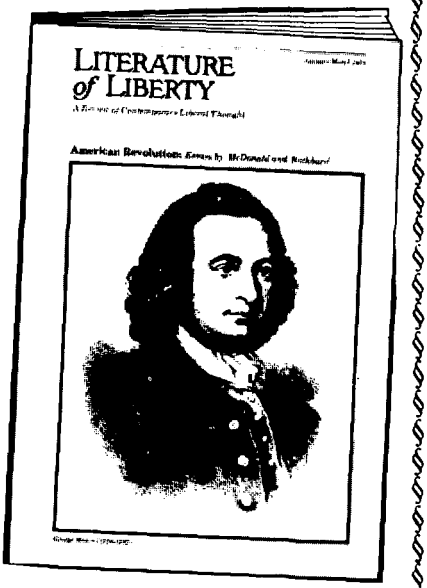

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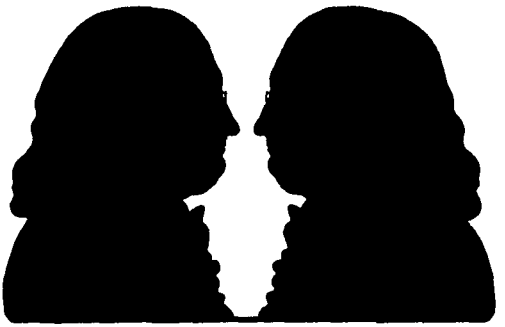

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PRIVATE PROPERTY AND COMPETITION

[E]verything is interlocked: competition as a regulator of the economy presupposes free market prices; free market prices are impossible without genuine independence of economic units, and their independence stands and falls by private ownership and freedom of decision, unimpaired and undisturbed by government planning. No collectivist economy can possibly satisfy the last of these conditions without ceasing to be collectivist, and therefore it cannot enjoy the advantages of the regulatory and guiding functions of competition. . . . It follows that "socialist competition" can, at best, stimulate . . . performance but cannot rule and guide the economic process. It is only half of what competition is in the market economy, and we may well ask whether this bisection does not reduce the effectiveness of even that half of competition which alone is accessible to collectivism, namely, the stimulating effect.

—Wilhelm Röpke

A Humane Economy
(Chicago: Henry Regnery Co.,
1960), pp.96–97.

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